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Drawn by EDWARD DUNCAN, Esq.]

THE LIFE-BOAT TO THE RESCUE.

E. Duncan.

Frontispiece.

HISTORY

AND

YACHT-BOAT.

AND RECREATION

BY RICHARD LENTZ.

OF THE YACHT "MORRIS" IN THE ATLANTIC OCEAN.

WITH AN ACCOUNT OF THE YACHT "MORRIS" IN THE ATLANTIC OCEAN.

WITH ILLUSTRATIONS.



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HISTORY
OF THE
LIFE-BOAT,
AND ITS WORK.



BY RICHARD LEWIS,
OF THE INNER TEMPLE, ESQ., BARRISTER-AT-LAW,
AND SECRETARY OF THE ROYAL NATIONAL LIFE-BOAT INSTITUTION.

WITH ILLUSTRATIONS.

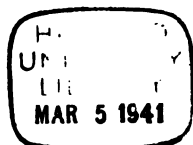


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TO ELEANOR,

THE REVERED WIDOW OF

Algernon, Duke of Northumberland, K.G., F.R.S.,

Vice-Admiral,

THE WARM FRIEND OF THE SHIPWRECKED SAILOR

AND

THE LIBERAL SUPPORTER OF THE LIFE-BOAT CAUSE,

THIS WORK,

AS A MARK OF GREAT ESTEEM,

IS DEDICATED.

PREFACE.

THE Editor of this volume has been induced to bring briefly into one comprehensive view all that relates to the history of the NATIONAL LIFE-BOAT INSTITUTION, and to its famous Self-righting Life-boat ; so that the general reader may find in it a subject of much interest, which will amply repay his diligent study.

He has obtained for this purpose abundant materials from various sources, and particularly from the pages of the 'Life-boat Journal,' which he, in conjunction with Captain J. R. WARD, R.N., the Institution's Chief Inspector, has conducted during the past twenty-two years.

His object will be fully attained if he shall succeed in placing before the British public and foreign maritime nations a reliable and instructive volume on all that concerns one of the noblest Institutions of this country.

It has been one of his objects to exhibit the method by which the model of the Institution's present Life-boat has been gradually arrived at, and to give by a plain

narration of facts the history of the continued efforts of several generations ; and to indicate the slow and laborious process by which ultimate success has been achieved.

It will be to the intelligent reader a curious study to observe for how long a period (it may be said for nearly a century) clever men of every condition and of wide experience sought in vain for a practical solution of the idea which was nevertheless ever uppermost in their minds—an *insubmergible* and *self-righting* boat. Again, it will be noted that the universal desire and prolonged attempts to solve the problem give important testimony to the urgent need felt for such a vessel ; while the immense success which followed so rapidly on the establishment in London of one central body for the whole coast of these islands—by which the labours of Local Committees, the experience and courage of our seaboard population, and the wealth and hearty co-operation of our seaports and inland towns were alike concentrated on the same objects—renders emphatic testimony to the value of a *National* Institution.

There are two points in connection with the history of the Institution, which, inasmuch as they have operated silently and continuously rather than on any one conspicuous occasion, do not find a prominent place in the

following pages, but which it would be manifestly unjust to pass over in silence—the services of the Fourth Estate, and the personal intrepidity of the Life-boat Inspectors.

With regard to the former, it is difficult to over-estimate the immense assistance rendered to this Institution by the Press during the last twenty-five years. Some most thrilling and instructive articles have appeared in all classes of publications and newspapers on its great work, which threw a sunlight on its renewed labours, and which attracted the attention of the public, although at first slowly, yet surely. The success which the efforts of the Press contributed thus to produce has become so marked that the British LIFE-BOAT INSTITUTION is now the Model on which other Nations have formed, and are still forming, similar Institutions on all the sea-coasts of the World.

Again, a little reflection during the perusal of this work will probably suggest to the minds of most readers a point, to which the Editor must nevertheless bear express testimony, namely, that the successive inventions and improvements of the last twenty-five years could not have been put before the world by the Institution, unless they had been tried and proved by its own responsible Officers; and furthermore that such trials (especially in the early years of the Institution's history)

could not be made without great and continued exposure to hardship and peril on their part.

Neither can the Editor forbear expressing his obligations to Mr. W. R. SMITH, Chief Clerk of the Institution, for valuable co-operation in arranging many of the details of the book.

14, JOHN STREET, ADELPHI,
London, October, 1874

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THE
LIFE-BOAT AND ITS WORK.

. "Peace hath her victories
No less renowned than War."

MILTON.

CHAPTER I.

THE SEA-FARING TRAVELLER—MERCHANT SHIPPING ACTS—INVENTION OF THE LIFE-BOAT—LUKIN'S "UNIMMERGIBLE" BOAT—WRECK OF THE 'ADVENTURE'—WOULDHAVE'S "CORK BOAT"—GREATHEAD'S BOAT AND ITS SERVICES—ACCIDENTS TO BLYTH, STONEHAVEN, AND TYNE LIFE-BOATS—LINES ON THE REDCAR OLD LIFE-BOAT.

IN this sea-girt isle of ours the warmest sympathies of all are constantly excited on behalf of those who suffer from Shipwreck ; and hence in our age it is happily regarded as one of the most important social duties to provide, so far as practicable, for the safety of the sea-faring traveller—to protect his ship from the electric fire, to light up our headlands for his safe return, and to plant Life-boats on the coast for his succour in the hour of distress.

Important as those objects are, both nationally and individually, yet it is only within the memory of living men that any real and practical attempts were made to promote and establish them. The thunderbolt continued to burst on the unprotected mast, to set fire to the ship, and to decimate the crew ; the homeward-bound mariner would furl his sail when within sight of his native shore,

and be welcomed to it by coal fires or tinkling bells ; while those who suffered from shipwreck were frequently allowed to perish within sight of land, their countrymen listening to their piercing cries for help, and yet powerless to succour them.

Previous to the year 1854, the NATIONAL LIFE-BOAT INSTITUTION, through the medium of its journal and other sources, had unceasingly expressed its strong convictions of the utter inadequacy of all the then existing means for affording succour to shipwrecked persons around our coasts. Its Committee mourned over this state of things as a national discredit, believing that many hundreds of lives were every year sacrificed at the very threshold of our doors, without any of those strenuous efforts being made for their relief which the urgency of the case demanded, and which our character as a Christian nation loudly called for. They also urged that the shipowner as the employer of the seaman, and the agent for the emigrant and other passengers, should be compelled to provide every available means to prevent accident and to afford them security.

The Government of the day at last became convinced of those facts, and made a successful effort to meet the evil, by means of that great shipping measure—"An Act to amend and consolidate the Acts relating to Merchant Shipping." This Act embodies a most comprehensive system of legislation for all the vast and varied interests involved in the immense shipping trade of this country ; and it has been worthily supplemented by the Amendment Shipping Act of 1873, a synopsis of which will be found in the Appendix.

Soon afterwards the Board of Trade, as the representative of the Government, joined cordially with the NATIONAL LIFE-BOAT INSTITUTION in completely

reorganising the means for Saving Life from Shipwreck on the coasts of the United Kingdom, the Institution undertaking the management of the Life-boat system, and the Board of Trade, in conjunction with the Coast-guard, that of the rocket and mortar apparatus.

We will now proceed to describe what is known as to the origin of the Life-boat.

As is frequently the case with great inventions, it is somewhat difficult to say who was the first designer of the Life-boat; for although Mr. HENRY GREATHEAD, a shrewd boat-builder at South Shields, has very generally been credited with designing and building the first Life-boat about the year 1789, yet it is certain that Mr. LIONEL LUKIN, a coach-builder in Long Acre, London, had designed and fitted a boat for Saving Life in cases of Shipwreck, which he called an "Unimmergible Boat," some four or five years before GREATHEAD brought forward his plan for a Life-boat.

LUKIN was a native of an inland town, Dunmow, in Essex, and not a resident in a seaport; he had nevertheless learned "that by the oversetting and sinking of both sailing and rowing boats many valuable lives had been lost," and was thus induced to turn his attention to the subject in 1784. The then PRINCE OF WALES (GEORGE IV.) who knew LUKIN personally, not only encouraged him to test his invention experimentally, but offered to pay the whole expense of his experiments.

It appears that LUKIN then purchased a Norway yawl, which he fitted up according to his plan, and which he tried in the Thames. To the outside of the upper frame of the yawl he added a projecting gunwale of cork, tapering from nine inches amidships, off to very little at the head and stern, and, in addition to this, he formed within the boat from the gunwale to the floor a

hollow water-tight enclosure, which gave the buoyancy that was required, the compartment running nearly from stem to stern. By these means "the vessel had such a power of buoyancy in its upper part as to render the specific gravity of the whole vessel and its contents less than the specific gravity of the body of water it would displace in sinking." In order to give it weight or ballast sufficient to keep it upright, the patentee added a false iron keel, and he increased the buoyancy of the boat by two water-tight enclosures, one at its head, and another at its stern. Upon these principles several Life-boats were constructed, and found "to be strictly unimmovable." A patent for the design was taken out by LUKIN on the 2nd of November, 1785, and the specification appeared in the third volume of the 'Repertory of Arts.' The accompanying drawings of LUKIN'S Life-boat are *fac similes* of those given in the book, descriptive of his boat, which was published by him in 1790.

The Rev. Dr. SHAIRP, of Bamborough, hearing of the invention, and having charge of a charity for saving life and property at sea, sent a coble to Mr. LUKIN to be made "unimmovable." This was done, and satisfactory accounts were afterwards received of the altered boat, which was reported to have saved several lives in the course of the first year of its use.

Although the PRINCE OF WALES had been the liberal patron of Mr. LUKIN, yet even his influence was not sufficient to bring the Life-boat into notice; and Mr. LUKIN appealed in vain for encouragement to the First Lord of the Admiralty, to the Deputy Master of the Trinity House, and to various Admirals and Captains of the Navy. With the exception of the Bamborough coble, not a single Life-boat on this plan was placed at any of the dangerous parts of our coast.

LUKIN retired from business in 1824, and ultimately went to reside at Hythe, in Kent, where he died in 1834. At his request, the following inscription was engraved on the reverse side of his tombstone, and is still to be seen in Hythe churchyard :

“ This LIONEL LUKIN

Was the first who built a Life-boat, and was the original Inventor of that principle of safety, by which many lives and much property have been preserved from Shipwreck; and he obtained for it the King's patent in the year 1785.”

As we have said, notwithstanding LUKIN'S ceaseless efforts to bring his plan of Life-boat into general use, hardly any efforts had been effectually made to aid the shipwrecked mariner until the year 1789, when the *Adventure*, of Newcastle, was wrecked at the mouth of the Tyne. While this vessel lay stranded on the Herd Sand at the entrance of the river, in the midst of tremendous breakers, her crew “dropped off one by one from her rigging,” only three hundred yards from the shore, and in the presence of thousands of spectators, not one of whom could be induced to venture to her assistance in any boat or coble of the ordinary construction. Under the strong feelings excited by this disaster, a Committee was appointed, at a meeting of the inhabitants of South Shields, to offer premiums for the best models of a Life-boat “calculated to brave the dangers of the sea, particularly of broken water.”

From the many plans which were offered to the Committee, two were selected — one by Mr. WILLIAM WOULDHAVE, a painter, and the other by Mr. HENRY GREATHEAD.

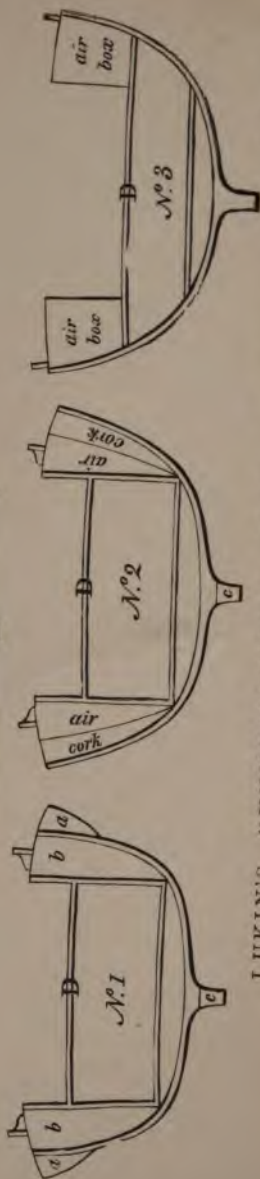
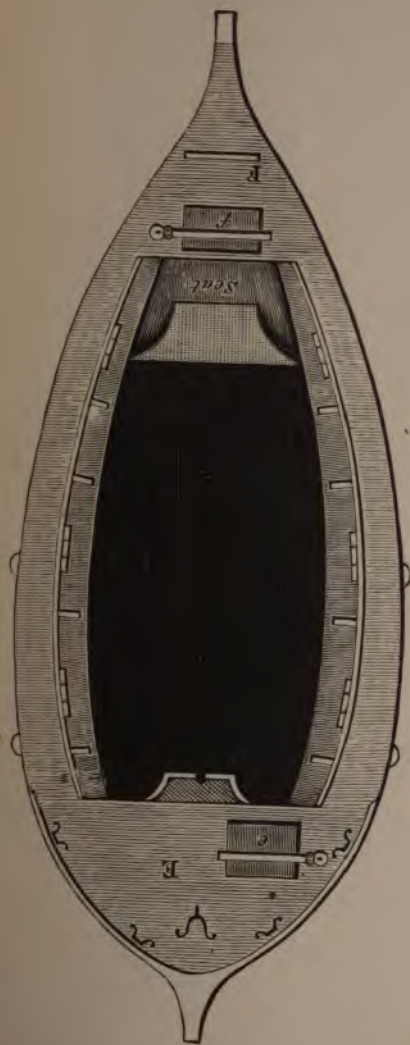
The idea of WOULDHAVE'S form of boat was suggested to him, it is said, by the following circumstance :—Having

been asked to assist a woman to put a "skeel" of water on her head, Mr. WOULDHAVE noticed that she had a piece of a broken wooden dish lying in the water, which floated with the points upwards, and turning it over several times, he found that it always righted itself. This observation suggested to him the construction of his model, but he does not seem to have done more than construct a boat which was long known at Shields by the name of *Wouldhave's Cork Boat*.

As regards the boat suggested by MR. GREATHEAD, the great novelty in it was the improvement of making the keel curved instead of straight ; and the Shields Committee awarded to him the premium, and employed him to build a Life-boat as he had proposed, its cost being defrayed by public subscriptions. It was built at South Shields, and was launched there in January, 1790.

In a letter addressed to *The Monthly Magazine*, in July, 1802, by "A Son of the Tyne," it is stated that the boat was not altogether on GREATHEAD'S plan, but that the Committee adopted his form of keel, and took the hint from WOULDHAVE'S model of making the boat more buoyant by means of cork. The boat was given to GREATHEAD to build, because he appeared to take an interest in the work, and was the only one in the boat-building trade who had taken notice of the advertisement.

The dimensions of the boat were as follows : length extreme, 30 ft. ; length of keel, 20 ft. ; breadth of beam, 10 ft. ; depth of waist outside, $3\frac{1}{4}$ ft. ; depth inside, to deck, $2\frac{1}{2}$ ft. ; stem and stern, alike, $5\frac{3}{4}$ ft. high, sheer of gunwale, 30 in. She was fitted to pull ten oars double-banked with iron thole-pins, and grummets, and had a very raking stem and stern-post, $10\frac{1}{4}$ in. to 1 ft. The depth of main keel was 4 in., with great camber or



LUKIN'S "UNIMMERGIBLE" BOAT. INVENTED 1785.

Scale $\frac{1}{4}$ In. to 1 Foot.

To face p. 6.

curvature, and three sliding keels. A cork lining, 12 in. thick, ran fore and aft on each side, and reached from the deck to the thwarts; and a cork fender outside, 16 in. deep, 4 in. wide, and 21 ft. long, not reaching to the stem or stern within $4\frac{1}{4}$ ft., nearly 7 cwt. of cork being fitted to the boat altogether. A deck or platform was laid at 11 in. above the bottom of the keel, and there were five thwarts, 36 in. apart from centre to centre, at 16 in. above the flat, and 11 in. below the gunwale. The form of the boat was like that of a steamer's paddle-box boat, with stem and stern alike. She had no means of freeing herself of water, or of self-righting, in the event of being upset.

She was at first moved along the shore upon four low wheels; but another plan was afterwards adopted. Two wheels of 12 ft. diameter, with a moveable arched axis, and a pole affixed thereto for a lever, were constructed, and the boat was suspended near her centre between the wheels under the arched axis, toward each extremity of which was an iron pin. When the pole was elevated perpendicularly, the upper part of the axis became depressed, and a pair of rope slings, which went round the boat, being fixed to the iron pins, she was raised with the greatest facility by means of the pole, which was then fastened down to the stern of the boat.

It appears, therefore, that GREATHEAD'S boat differed from LUKIN'S in the shape of the keel, and in the substitution of cork for the side air-chambers. Indeed, in the former's boat the peculiar nature of the curvature of the keel is reckoned the basis of its excellence; and it is owing to this very important peculiarity, which is the undoubted plan of Mr. GREATHEAD, that he has been popularly regarded as the inventor of the Life-boat, and entitled to a national reward.

Mr. WOULDHAVE died at South Shields, in 1821. His Life-boat design is commemorated in the parish church of St. Hilda, at that place, on a tombstone, which is headed by a model of a Life-boat, and bears the following quaint inscription, a copy of which has been supplied to the Editor by the Rev. GEORGE E. SHARLAND, of South Shields :—

Sacred to the Memory of
WILLIAM WOULDHAVE
Who died September 28th, 1821,
Aged 70 years,
Clerk of this Church
and Inventor of that invaluable blessing to mankind
The Life-boat."

"Heaven genius scientifick gave,
Surpassing vulgar boast, yet he from soil
So rich no golden harvest reap'd—no wreath
Of laurel glean'd nor but the sailor's heart
Nor that ingrate a Palm unfading this,
Till Shipwrecks cease, or Life-boats cease to save."

A model of his Life-boat is also suspended to the chain of the chandelier in St. Hilda's church.

Although the Life-boat constructed by Mr. GREATHEAD was built in 1789, yet it performed no useful service till 1791, when it saved the crew of a Sunderland brig which was stranded at the entrance of the Tyne. On the 1st of January it saved the crews of the ship *Parthenius* of Newcastle, and the *Peggy*. In 1796 it did similar service to the crew of a Scottish sloop, the *Countess of Errol*; and in 1797 to the *Fruit of Friends*, from Leith, and the *Planter*, from London, in which fifteen lives were saved. Notwithstanding these numerous acts of humanity, no other Life-boat was made till 1798, when the, then Duke of NORTHUMBERLAND ordered one to be built at his own expense by GREATHEAD, and

endowed it with an annuity for its preservation. It was stationed at North Shields ; and soon after it was finished it saved seven men from the sloop *Edinburgh* of Kincardine, which was wrecked on the Herd Sands. It saved also the crew of the brig *Clio* ; and in 1799 the crew of the ship *Quintilian* from St. Petersburg. The Duke also ordered a Life-boat for Oporto in 1800 ; and in the same year Mr. CATHCART DEMPSTER ordered one for St. Andrew's, where, on the 10th of January, 1803, it was the means of saving the crew, twelve in number, of the *Meanwell* of Scarborough. On this occasion the storm was so violent, that the fishermen could not be persuaded to go afloat in the boat, till Mr. DEMPSTER, one of the magistrates, Major HORSBURGH, and Mr. DAVID STEWART, a shipmaster, nobly volunteered their services. Owing to these and other proofs of its practical value, Mr. GREATHEAD received many orders to build Life-boats, and before the end of 1803 he had built no fewer than *thirty-one—five* for Scotland, *eight* for foreign countries, and *eighteen* for England.

In the beginning of 1802, when two hundred lives had been saved at the entrance of the Tyne alone, GREATHEAD applied to Parliament for a national reward ; and, after a Committee of the House of Commons had taken evidence, and reported on the value of the invention, the sum of £1200 was voted to him. The Trinity House added £105, Lloyd's the same sum, the Society of Arts its Gold Medal and 50 guineas, and the EMPEROR OF RUSSIA a diamond ring.

After such gratifying testimony to the value of Life-boats had been given, it might reasonably have been anticipated that their number would be increased rapidly on the coast. Such, however, was not the case. Neither can we find that any authentic records were kept of the

boats, their services, and the accidents that may have occurred to them.

We find, however, a notice of the following lamentable accident to one of the boats, with a fearful loss of life. It appears that at Hartley, on the coast of Northumberland, five miles north of Tynemouth, in the year 1810, one of GREATHEAD'S Life-boats, carried overland from Blyth, rescued the crews of several fishing cobles that were prevented landing by a high sea tumbling in suddenly upon the coast, unaccompanied by wind. On returning towards the shore, the boat incautiously got too near the South Bush Rock, when a heavy sea broke on board, and split her in halves; the result was, that the whole of those on board, thirty-four in number, were unhappily drowned.

In contrast to the sad result of this accident, it may here be mentioned that in February, 1874, the Stonehaven self-righting Life-boat met with an unfortunate accident, when four of her crew were lost. On that occasion she was so much damaged by being violently dashed by the heavy seas for hours against the large stones and masses of rock at the back of Aberdeen Pier, after she was abandoned, that it was found impracticable to repair her. Still the way in which the boat passed through this trying ordeal, which would have destroyed any ordinary boat in a very short space of time, demonstrated in a most striking manner the great strength of the diagonal principle of boat-building, carried out in the self-righting Life-boats of the Institution, and the ample security that is, in that respect, given to the brave crews who work those boats. Even in its injured condition the Life-boat had not lost in any great degree its powers of flotation.

The original Life-boat built by GREATHEAD also

terminated its career about the year 1821, when it struck upon the rocks while proceeding out to a stranded ship at the mouth of the Tyne, and was destroyed ; but no life was lost.

Even now several of GREATHEAD'S Life-boats, which are exclusively rowing boats, are to be found on the coast ; the oldest one is that in the possession of the boatmen at Redcar, it having been built in 1802. On seeing this fine old Life-boat, which has saved some scores of lives, Viscount STRATFORD DE REDCLIFFE composed some years ago the following verses, which were afterwards set to music by CLARIBEL, and published by Messrs. BOOSEY & Co. :

THE LIFE-BOAT.

The Life-boat ! Oh, the Life-boat !
We all have known so long,
A refuge for the feeble,
The glory of the strong.
Twice thirty years have vanished,
Since first upon the wave,
She housed the drowning mariner,
And snatched him from the grave.

Let others deem her crazy,
Nor longer fit to breast
The surge that madly driven
Bears down with foaming crest.
But we who oft have mann'd her,
When death was on the prow,
We cannot bear to leave her,
Nor will we leave her now.

The voices of the rescued,
Their numbers may be read,
The tears of speechless feeling
Our wives and children shed ;
The memories of mercy
In man's extremest need,
All, for the dear old Life-boat
Uniting seem to plead.

CHAPTER II.

SIR WILLIAM HILLARY'S APPEAL—MR. THOMAS WILSON'S HEARTY CO-OPERATION—FORMATION OF THE NATIONAL SHIPWRECK INSTITUTION—ISLE OF MAN LIFE-BOATS—PALMER'S LIFE-BOAT—PROGRESS OF THE SHIPWRECK INSTITUTION.

AS already stated, the important and national subject of the preservation of life from Shipwreck on our coast gradually languished until the year 1823, when, in consequence of the frequency of the calamitous shipwrecks, with great loss of life, which took place every year on our coasts, and the inadequate means provided for the rescue of the crews, the late Sir WILLIAM HILLARY, Bart., published a powerful appeal to the nation, setting forth in forcible language the whole subject, and boldly asking whether Englishmen would quietly look on and see hundreds of their fellow-creatures annually perish on the shores of the United Kingdom, when effectual means of rescue, if supplied and properly used, were within reach.

Sir WILLIAM HILLARY, had often witnessed, while residing in the Isle of Man, some of the harrowing scenes attending the loss of vessels and their crews. These sad scenes, working upon a generous and humane disposition, led him to turn his thoughts towards devising a remedy for an evil of such fearful magnitude. It is probable that the wrecks of the Government cutter, the *Vigilant*, and some other vessels in Douglas Bay, in which Sir

WILLIAM HILLARY personally assisted in saving life, and the total wreck of H. M. brig *Racehorse*, on Langness Point, in the Isle of Man, all of which occurred in the year 1822, were the more immediate causes which roused his energetic mind to make his vigorous appeal to the public.

That appeal was warmly responded to, for it struck a sympathetic chord in the hearts of too many to permit the subject being any longer overlooked. Still at first but little was done, until the latter end of 1823, when Sir WILLIAM became acquainted with Mr. THOMAS WILSON, who was then one of the representatives in Parliament for the City of London, and who cordially threw himself into the cause, feeling that there was a sort of claim on those engaged in foreign commerce, to assist in any plan for the preservation of the lives of those by whom that commerce was carried on. Accordingly, we find Mr. WILSON immediately taking steps to hold a preliminary meeting at the London Tavern, on the 12th of February, 1824, when, having been called to the chair, the following resolution was unanimously carried :—

“That this meeting, taking into consideration the frequent loss of human life by Shipwreck, and believing that by the preconcerted exertions of practical men, and the adoption of practicable means, such calamities might often be averted, are of opinion that a National Institution should be formed (to be supported by voluntary donations and subscriptions), for the Preservation of Life in cases of Shipwreck on the coasts of the United Kingdom ; for affording such immediate assistance to the persons rescued as their necessities may require ; for conferring rewards on those who preserve their fellow-creatures from destruction ; and for granting relief to

the destitute families of any who may unfortunately perish in their attempts to save the lives of others."

It was then arranged that a general meeting at the London Tavern should be convened for the 4th of March following, with the view to the formation of a National Shipwreck Institution. In the meantime, Mr. WILSON was successful in obtaining the consent of His Majesty King GEORGE IV. to become the patron of the institution; of their Royal Highnesses the Dukes of YORK, CLARENCE, SUSSEX, CAMBRIDGE, and Prince LEOPOLD to be its Vice-Patrons; and the Earl of LIVERPOOL its President. The two Archbishops, the Bishops of LONDON, DURHAM, BATH and WELLS, and BRISTOL, Mr. GEORGE HIBBERT, Mr. GEORGE LYALL, Mr. JONATHAN CHAPMAN, with many others of the nobility, gentry, and merchants in the kingdom, also gave their names in support of the Institution, as Vice-Presidents and Members of Committee. On the 4th of March a general meeting, most influentially and numerous attended, was accordingly held at the London Tavern, at which the Archbishop of CANTERBURY (Dr. MANNERS SUTTON) presided.

The result of this meeting in the City of London was that the "ROYAL NATIONAL INSTITUTION FOR THE PRESERVATION OF LIFE FROM SHIPWRECK" was founded, and established on a permanent basis; and it must have been a proud day for Sir WILLIAM HILLARY, Mr. WILSON, and their coadjutors, to find the cause they had long worked for in private, publicly and eloquently advocated in the metropolis of the kingdom by various influential men, including among them the ever-to-be-revered name of WILLIAM WILBERFORCE.

On his return to the Isle of Man, Sir WILLIAM HILLARY, supported by the Lieut.-Governor and other

officers of the island, established in 1826 a District Life-boat Association. The first Life-boat, built by Mr. PLENTY, of Newbury, was stationed in Douglas Bay, another at Castletown in 1827, a third at Peel in 1828, and a fourth at Ramsay in 1829. Between the years 1821 and 1846 no fewer than 144 wrecks had taken place on the island, and 172 lives were lost, while the destruction of property was estimated at a quarter of a million. In 1825, when the *City of Glasgow* steamer was stranded in Douglas Bay, Sir WILLIAM HILLARY assisted in saving the lives of sixty-two persons; and in the same year eleven men from the brig *Leopard*, and nine from the sloop *Fancy*, which became a total wreck. In 1827-32, Sir WILLIAM, accompanied on one occasion by his son, saved many other lives; but his greatest success was on the 20th of November, 1830, when he saved in the Life-boat twenty-two men, the whole of the crew of the mail steamer *St. George*, which became a total wreck on St. Mary's Rock. On this occasion he was washed overboard among the wreck, with other three persons, and was saved with great difficulty, having had six of his ribs fractured.

On its formation, the ROYAL NATIONAL INSTITUTION FOR THE PRESERVATION OF LIFE FROM SHIP-WRECK was nobly supported by the liberality of the public, its receipts during the first year of its existence having reached the sum of £9826 6s. 6d., and the Committee, in their first Report, had the satisfaction to state that they had caused twelve Life-boats to be built for different stations on the coast, besides which thirty-nine Life-boats had been stationed on our shores by benevolent individuals, and Associations, not connected with the Institution. It should be added, that in its early days, the Institution assisted local bodies to place Life-boats on the coast; and some of them

remained nominally in connection with it, but it did not undertake any superintendence or control over them. The Institution had also placed the mortar apparatus of Captain MANBY at sixteen different stations.

It may here be mentioned that, many years afterwards, it abandoned, from want of adequate support, two important functions, namely, supplying the coast with the mortar and rocket apparatus, and providing for the wants of sailors who had been saved from Shipwreck.

The first of these duties is now, as previously mentioned, most efficiently discharged by the Board of Trade, in conjunction with the Coastguard; and the second is admirably and promptly carried out by the Shipwrecked Fishermen and Mariners' Society, with the help of its numerous agents on the coast.

In the year 1826 the late GEORGE PALMER, Esq., of Nazing Park, Essex, M.P. for the Southern Division of that County, first became connected with the Institution, to the interests of which he unceasingly devoted a large portion of his valuable time, to within a few weeks of his lamented death on the 12th of May, 1853. In 1828 his plan of fitting Life-boats was used by the Institution, and was only superseded in 1852 by the adoption of the self-righting principle.

The services rendered by PALMER'S boats to shipwrecked persons and vessels in distress, were very great, some hundreds of the former having been saved through their instrumentality from inevitable death, and many of the latter from destruction.

In the second year of the history of the Institution, 1825-26, the receipts amounted to £2392 7s. 5d., in addition to which there was a legacy of £1000 from the late JOHN HENRY HECKER, Esq., of Finsbury, making a total of £3392 7s. 5d.

In their second Report the Committee were enabled to state that they had placed additional Life-boats, and sets of the mortar apparatus on the coast ; and had established several Branch Associations. Up to that period the Society had contributed to the saving of 342 lives from Shipwreck, either by its own life-saving apparatus or by other means for which it had granted rewards.

From the next nine Reports of the Institution we find that its annual receipts during the fifteen years they embrace never reached the amount received even in the second year after its establishment. The Institution nevertheless pursued its work on the coast as far as its limited means permitted.



CHAPTER III.

ACCIDENTS TO THE BLYTH, ROBIN HOOD'S BAY, AND SOUTH SHIELDS
LIFE-BOATS—CONDITION OF THE LIFE-BOAT SERVICE IN 1849—
RESULTS OF THE WORK OF THE INSTITUTION IN TWENTY-FIVE
YEARS.

BETWEEN 1841 and 1850 no appeal was made to the public on behalf of the NATIONAL SHIP-WRECK INSTITUTION, and it is therefore difficult to furnish any detailed account of its operations; but the records of three accidents to Life-boats, with a terrible loss of life, are succinctly given.

The first was at Blyth, Northumberland, in October, 1841. The Life-boat was pulling off against a strong wind, when a heavy sea struck her, causing her to run stern under, and to half fill with water. From want of delivering-valves the boat could not free herself; she became unmanageable, and fell off the wind, when a second sea struck her, and she capsized. On this occasion ten men were drowned.

Again, at Robin Hood's Bay, on the coast of Yorkshire, seven miles south of Whitby, in February, 1843, the Life-boat went off to the assistance of a stranded vessel, the *Ann*, of London, during a fresh northerly gale. The Life-boat had got alongside the wreck, and was taking in the crew, when, it is supposed, four or five men jumped into her at once on one side, when, a heavy

sea striking her at the same time, she capsized. Many of the crew got on her bottom, while three remained underneath her, and in this state she drifted towards the shore on the opposite side of the bay. On seeing the accident from the shore, five gallant fellows launched a coble (fitted with air-cases as a Life-boat), and tried to pull off to the rescue; but she had hardly encountered two seas, when she was turned *end over end*; two of her crew were drowned, and she drifted ashore bottom up. On this occasion Lieut. LINGARD, R.N., of the Coastguard service, and eleven men, lost their lives, three men came on shore safely under the Life-boat, and some on her bottom; the other men were washed off.

The following deplorable accident also happened to the South Shields Life-boat on the 4th of December, 1849, when the boat, manned by twenty-four pilots, went out to the aid of the *Betsy*, of Littlehampton, stranded on the Herd Sand. There was a heavy sea on from the eastward at the time, but little wind, and a strong ebb-tide. The boat had reached the wreck, and was lying alongside, with her head to the eastward, having a rope fast to the quarter, but the headfast not properly secured, and the shipwrecked men were about to descend into the Life-boat, when a heavy sea, recoiling from the bows of the vessel, lifted the bow of the boat, and turned her up on end, throwing the whole of the crew and the water into the stern sheets. The headfast not holding, the boat drove in this position, astern of the vessel; and, before she could recover herself, a second sea completed the work of destruction by throwing her completely over, and she ultimately drifted on shore bottom up. On this occasion twenty out of twenty-four (or double her proper crew) were drowned under the boat. On seeing the accident two other Life-boats immediately dashed off

from North and South Shields, saved four of the men, and rescued the crew of the *Betsy*.

The boat to which this last sad disaster happened was 34 feet long, over all, and had nearly 11 feet breadth of beam. It was of the shape of a steamer's paddle-box boat, or nearly of the original GREATHEAD form, and had 30 inches sheer of gunwale, and 11 inches curvature of keel. It was fitted with an air-case under the flat or deck, 15 inches in height, which contained 224 cubic feet of air, with a well for water-ballast in the middle, holding 30 cubic feet, or 17 cwt. when full. The surface of the flat or deck was 20 inches above the underside of the keel; and the boat was fitted with flat top air-cases around the sides. The boat had an open well when the accident happened, and when thrown on end the water-ballast would run out into her stern.

It is but justice to add, and it is a fact highly honourable to the port, that the Life-boats at Shields had been in constant use since GREATHEAD first launched his boat there on the 30th of January, 1790, and that this was the first case where loss of life had happened.

At this time (1849) the Life-boat work was in a very depressed state, the public having apparently lost all interest in it. Some of the Local Life-boat Associations had ceased to exist, and many of the Life-boats had been allowed to fall into decay; and in places where shipwrecks were very rare, the boats had remained many months out of the water; so that when wrecks did occur the boatmen had no confidence in them, and preferred going off in their own craft to a wreck, which was often attended with most lamentable consequences. Funds too were often wanting to pay these brave men for their services, and the whole system was in such a low state that among all the Life-boats in the United Kingdom

there were perhaps not a dozen really efficient boats. The NATIONAL SHIPWRECK INSTITUTION with diminished funds had been exciting less interest from year to year, while the great increase of our commerce was constantly occasioning an increased number of casualties at sea.

It may be interesting to know that at about this period the following nineteen Life-boats were more or less in connection with the Institution :—

ENGLAND.		SCOTLAND.
Boulmer.	Moelfre.	Nil.
Bridlington.	North Sunderland.	
Boston Deep.	Penmon.	IRELAND.
Bideford (three boats).	Penrhyn.	Derrynane.
Cemlyn.	Rhoscolyn.	Kilmore.
Holyhead.	Rye.	Rosslare.
Llanddwyn.	Scilly Islands.	Total, 19 boats.

Its income in 1849-50 was £354 17s. 6d. in yearly subscriptions, donations, and dividends arising from a small amount of stock in the 3 Per Cent. Reduced Annuities.

From the time of the formation of the Institution in 1824 it had awarded 74 gold medallions, and 429 silver medals, to officers, boatmen, and other persons, as honorary distinctions for their meritorious exertions in saving life from shipwreck ; and had voted pecuniary rewards to the amount of £6976 for saving altogether 6716 lives ; in addition to having expended £5500 on Life-boats, and other appliances, for saving life from shipwrecks on our coasts.

CHAPTER IV.

RE-ORGANISATION OF THE SOCIETY IN 1850—SERVICES OF THE PRESIDENT, THE COMMITTEE, AND OFFICERS—THE DUKE OF NORTHUMBERLAND'S PRIZE FOR THE BEST LIFE-BOAT—NOTICE TO BOAT-BUILDERS—LIFE-BOAT DESIGNS RECEIVED—THEIR EXAMINATION BY THE PRIZE LIFE-BOAT COMMITTEE—PRIZE AWARDED TO MR. JAMES BEECHING—GREAT EXHIBITION OF 1851—WRECK REGISTER AND CHART.

THE Committee were not insensible to the deficiencies in the means of saving life in 1850, but the support they received was not sufficient to enable them to overcome their difficulties.

The lamentable accident to the Shields Life-boat, however, had the effect of calling public attention to the Life-boat question ; and in the sequel important results to the cause of humanity flowed from an event which at the moment was only thought of as a great calamity. For the mind of the nation having been once directed to the existing state of things, men could no longer view with apathy the increasing loss of life from Shipwreck, the many and fatal accidents to inefficient Life-boats, and the entire absence of any along extensive lines of coast in these islands.

One of the first effects was, that following in the steps of those great men who, since the days of Queen ELIZABETH, have been the pioneers of progress in humanity as well as in arts, science, and literature, and have thus made this country illustrious by its religious and civilising

influences, a noble band of men formed themselves into a Committee to make renewed efforts on behalf of the shipwrecked sailor.

The late PRINCE CONSORT, with his highly cultivated mind, and intuitive appreciation of all that was good and great, accepted the office of Vice-Patron of the Institution, in conjunction with the late KING OF THE BELGIANS. Two or three years afterwards, Her Majesty THE QUEEN, who had been its Patron since her accession to the Throne, contributed £100 to its funds; and subsequently became an annual subscriber of £50 to the Society. Again, in 1860, HER MAJESTY was pleased to grant a Charter of Incorporation to the Institution. To this day THE QUEEN continues to take a warm interest in its welfare, which feeling is fully shared in by their Royal Highnesses the PRINCE OF WALES and the DUKE OF EDINBURGH, who have each most efficiently presided at its Annual Meetings.

ALGERNON, Duke of NORTHUMBERLAND, the "good Sailor Duke," became its President in 1851, and threw his whole heart into the work, which ultimately made his name famous throughout the world. On his decease in 1866, his office was filled by the present Duke of NORTHUMBERLAND, who takes great interest in the welfare of the Institution, and who, in conjunction with his son, Earl PERCY, M.P., continues to render it valuable and cordial co-operation.

Mr. THOMAS WILSON, formerly M.P. for the City of London, who had already been its Chairman for twenty-six years, and was then over eighty years old, with an unclouded intellect, and a zeal that knew no rest, became absorbed afresh in the work.

He was seconded by Mr. GEORGE PALMER, the Deputy Chairman of the Society. He was about the same age

as Mr. WILSON, and by his intelligence and foresight aided in every way in his power to further the great and national work of the Institution ; and shortly before his decease, in 1853, the Committee had the honour to present to him its Gold Medal in acknowledgment of his long and most valuable services.

In 1853 the Institution was most fortunate in enlisting the services of Mr. THOMAS CHAPMAN, F.R.S., Chairman of Lloyd's Register, as successor to Mr. GEORGE PALMER, as its Deputy Chairman. Mr. CHAPMAN has since then brought to bear on the affairs of the Life-boat Institution an amount of talent, activity, and experience which have rarely been witnessed in a similar capacity, and which have been productive of the happiest and most successful results to the cause of humanity.

In 1854 Mr. THOMAS BARING, M.P., F.R.S., at Mr. CHAPMAN'S request, became Chairman of the Committee of Management, in succession to the late Mr. Alderman THOMPSON, M.P., who had been appointed Chairman on the death of his friend Mr. WILSON. Mr. BARING continued to hold that office to the close of his life (1873), when Mr. CHAPMAN consented to become Chairman of the Committee ; and Mr. GEORGE LYALL, late Governor of the Bank of England, became the Deputy Chairman.

Sir EDWARD PERROTT, Bart., joined the Committee of the Institution in the early part of 1850. As Chairman of its Sub-Committees, he has during the past twenty-four years rarely been absent when its sub and general committee meetings are held ; and thus, and in many other respects, he has powerfully and unceasingly aided in building up the noble superstructure of Life-boat work which we now witness and admire on our coast. In grateful recognition of these services the

Committee of Management, in 1872, had the satisfaction to present to Sir EDWARD the Gold Medal of the Institution.

Captain WASHINGTON, R.N., F.R.S., became a member of the Committee in 1851; he brought his great experience and ability to bear for many years on the Life-boat cause, and published a pamphlet on Naval Architecture and Life-boats.

The Marquis of CHOLMONDELEY, Admiral Sir WILLIAM H. HALL, K.C.B., Mr. W. H. HARTON, Admiral RYDER, The Right Hon. STEPHEN CAVE, M.P., Captain DE STE. CROIX, Colonel FITZROY CLAYTON, Sir WILLIAM CLAYTON, Bart., Admiral MCHARDY, Colonel PALMER, and other gentlemen have also rendered valuable services for a long period at the Committees of the Institution.

In 1850, the Editor was appointed, at a comparatively early age for so responsible an office, Secretary of the Institution, and from that period to the present time he has had the happiness to enjoy the confidence of its Committee of Management, Officers, and Staff, its numerous Branch Committees, and the support of the public in general.

In 1852, Captain J. R. WARD, R.N., was appointed its Inspector of Life-boats. His appointment and services have been of great benefit to the Life-boat cause. Possessing a clear mind, considerable scientific knowledge, and a zeal tempered by great discretion, he has devoted a large portion of his life to mature the means of Saving Life from Shipwreck, and to promote the best interests of the Institution.

In 1862, Captain DAVID ROBERTSON, R.N., was appointed the Institution's Assistant Inspector of Life-boats, and he has ever since discharged the duties

of his responsible office to the great satisfaction of the Committee of Management and the Local Committees.

In consequence of the great increase in the number of the Life-boats of the Institution, it was found absolutely necessary to appoint another Inspector at the beginning of the present year, and Captain C. GRAY JONES, R.N., was accordingly selected for that important post ; and he has already given promise to emulate in every respect his two Senior Officers, having been presented with the Society's Silver Medal in acknowledgment of his intrepidity in the Dundrum Bay Life-boat in February last.

On the reorganisation of the Society in 1850, the Committee undertook the immediate and more decided superintendence of the Life-boat work on our coasts, with the aid of the Local Committees at the several Branches.

It was arranged that the boats should be periodically inspected by their own officers ; while a fixed scale of payments to the coxswains and crews of the Life-boats on all occasions of their going afloat in them, whether on service or quarterly exercise, was settled, in addition to an annual salary to the coxswains. Again, a system of quarterly and other Reports from the Branches to the parent Institution was initiated.

Beyond all this, however, it was evident that the first and most obvious step to take was to introduce an improved plan of Life-boat, both as regarded external form and internal fittings.

The Editor well remembers the deep interest which the late Duke of NORTHUMBERLAND took in the subject, and which resulted in His Grace's offering a prize of one hundred guineas for the best model of a Life-boat, together with a further like sum to defray the cost of

building a boat on the model to be chosen—and a hand-bill, of which the following is a copy, was extensively circulated on the coasts of the United Kingdom, and in many foreign countries, calling attention to his offer :—

“TO BOATBUILDERS, SHIPWRIGHTS, &C.

“Great loss of life having occurred from time to time on the coast of Northumberland, and elsewhere, by the upsetting of Life-boats, and especially in the case of the Shields Life-boat in December last, whereby twenty pilots were drowned, notice is hereby given, that, with a view to the improvement of boats to be employed for such purposes, His Grace the Duke of NORTHUMBERLAND offers the sum of one hundred guineas for the best model of a Life-boat, which may be sent to the Surveyor’s Department, Admiralty, Somerset House, London, by the 1st day of February, 1851.

“The Surveyor of the Navy has consented to act as final referee in adjudging the reward, and has named the following Committee to examine the models, and conduct the requisite experiments:—Captain WASHINGTON, R.N., F.R.S., Inspector of Harbours; JOHN FINCHAM, Esq., Master Shipwright at Portsmouth Dockyard; ISAAC WATTS, Esq., Assistant Surveyor, Admiralty, Somerset House; Commander JERNINGHAM, R.N., of H.M.S. *Excellent*, late Inspecting Commander of Coastguard at Great Yarmouth, and JAMES PEAKE, Esq., Assistant Master Shipwright, Woolwich Dockyard.

“And His Grace offers the further sum of one hundred guineas for building a Life-boat according to the model which may be approved of.

“It is considered that the chief objections to the present Life-boats, generally speaking, are :—

"1. That they do not right themselves in the event of being upset.

"2. That they are too heavy to be readily launched, or transported along the coast, in case of need.

"3. That they do not free themselves of water fast enough.

"4. That they are very expensive.

"It is recommended that the models be made on the scale of one inch to a foot, and that they be accompanied by plans, specifications, and estimates. The models will not be detained beyond the 1st of April, in case the respective builders should wish to send them to the Great Industrial Exhibition of 1851.

"London, October, 1850."

That offer was freely responded to by boat-builders and others from all parts of the United Kingdom, and from France, Holland, Germany, and the United States of America, and the large number of 280 models and plans were sent in.

On examining the papers, it was found that there was a want of exact information on many points, and accordingly a circular, naming the several particulars required, was sent to each contributor. The answers to these circulars, with the original descriptions, specifications, and plans of the several models, made five folio manuscript volumes.

The several models and plans were deposited in rooms at Somerset House, lent by the Admiralty, and the Committee appointed to decide on their relative merits devoted themselves unceasingly for six months to the examination of them.

A general review of the models soon pointed out that

they might be advantageously grouped according to their characteristic features. Thus there were several models in the shape of pontoons ; catamarans, or rafts, formed a second group ; a third group may be described as having for its type a troop boat or steamer's paddle-box boat ; a fourth as partaking chiefly of the north country coble ; and lastly, a group composed of the ordinary boat in every-day use, slightly modified according to the nature of the coast they were intended for.

After examining the models separately, so as to ascertain their form for pulling or sailing, their dimensions, capacity for holding water, area of delivering valves, weight, nature and amount of extra buoyancy, and trying experiments in the Thames on their relative stability, power of self-righting, and readiness in freeing themselves, having also prepared a description of several, and added a few remarks—each model was brought forward in turn before the General Committee, the description and remarks read over, discussed, corrected, and agreed upon.

The difficulty then arose, where so many boats were nearly alike, of deciding on the relative merits of each. In order to ensure that no good quality should be overlooked, the Committee agreed upon those points which they considered the essential qualities of a Life-boat, and their order of precedence. A certain numeral was then given to each of those qualities, according to its importance, so that the whole numbers should make up 100. It may be satisfactory to know what, in the opinion of the Committee, were those qualities, and the degree of importance they attached to them. They were as follows :—

Qualities as a rowing boat in all weather	20
Qualities as a sailing boat	18
Qualities as a sea boat ; as stability, safety, buoyancy forward for launching through a surf, &c.	10
Small internal capacity for water up to the level of the thwarts	9
Means of freeing boat of water readily .	8
Extra buoyancy ; its nature, amount, dis- tribution, and mode of application .	7
Power of self-righting	6
Suitableness for beaching	4
Room for, and power of, carrying pas- sengers	3
Moderate weight for transport along shore	3
Protection from injury to the bottom .	3
Ballast, as iron 1, water 2, cork 3 . .	3
Access to stem or stern	3
Timber heads, for securing warps to .	2
Fenders, life-lines, &c.	1
	<hr/>
	100

It will be seen by the above formula that the Committee considered it an essential requisite in a Life-boat that she should be a good rowing boat, and able to get off the beach in any weather in which a boat can live at sea, as, in the absence of such a power, other good qualities are of no avail. To this then was awarded the highest number ; but, as on the coasts of Norfolk and Suffolk, where the wrecks generally occur on outlying sands, nearly all the Life-boats go off under sail, and, as it was evident that some of the best models were prepared with this view, it was considered that these also

were entitled to be placed on a par with boats built chiefly for pulling ; yet, as rowing is the general rule around the coasts, a slight difference was made in its favour.

These preliminary formula having been arranged, all difficulties disappeared. Each model was again brought forward in its turn, each of its qualities was named and examined in order, and the number, or proportion of the whole number, according to its merits, was proposed, agreed upon, and set down in a column. After some days, when many models had been examined, these numbers were added up, and the relative order of merit in the several boats established. The six boats that stood first on the list were then for the third time brought forward, and placed together side by side, their several points again examined, and the models carefully compared with each other. The issue was a confirmation of the values already adjudged, and it was ultimately decided that Mr. JAMES BEECHING, of Great Yarmouth, was the successful candidate for the premium offered for the best model of a Life-boat, he having obtained 84 marks out of the maximum of 100.

The result of the labours of the Northumberland Committee, which was fully concurred in by Admiral Sir BALDWIN WALKER, Surveyor of the Navy, was embodied in an elaborate Report, accompanied by a plate of the Prize Life-boat, and of several of the principal boats brought under the Committee's notice, of which drawings were prepared by Mr. JOSEPH PROWSE, then Draughtsman in H.M. Dockyard, Woolwich, and now the zealous Surveyor of Life-boats to the Institution. This Report was published at the sole expense of the Duke of NORTHUMBERLAND, and copies of it were presented by him to all the competitors for his prize, to the principal

authorities in the United Kingdom, and to the Maritime Governments throughout the world.

A selection of the competing Model Life-boats was afterwards shown on a large stand in the Great Exhibition of 1851, at the desire of the Committee of the Naval Section. The Jury of that Class in their Report to the Commissioners of the Exhibition said in respect to them, "Models of these very Life-boats figure amongst the most valuable contributions to the Great Exhibition, and furnish a splendid example of liberality in the cause of humanity and practical science, never surpassed if ever equalled."

Together with the prize Life-boat Report above referred to was published the first Wreck Chart of the British Isles. Its unique appearance excited great attention; and to the late Admiral WASHINGTON is unquestionably due the credit of the first compilation and publication, under the authority of Government, of a Wreck Register and Chart of the United Kingdom. Wreck Registers and Charts have ever since been published, and are now issued annually under the authority of the Board of Trade. During the past twenty years a complete synopsis of the annual Wreck Register has appeared in the 'Life-boat Journal,' and the newspapers of the day, and such comments have largely contributed to mature the public mind in regard to the state of unseaworthy ships and the sad condition of our seamen.

CHAPTER V.

LIFE-BOATS BUILT BY BEECHING—ACCIDENTS TO LYTHAM AND RHYL
BOATS—LIFE-BOAT DESIGNED BY MR. JAMES PEAKE—DESIGN
ALTERED AND MODIFIED—THE 'LIFE-BOAT JOURNAL'—THE SHIP-
WRECKED MARINERS' SOCIETY—CHANGE OF TITLE BY THE NATIONAL
SHIPWRECK INSTITUTION — MUNIFICENT BEQUEST BY CAPTAIN
HAMILTON FITZGERALD, R.N.—THE BOARD OF TRADE—THE ROCKET
APPARATUS.

MEANWHILE Mr. JAMES BEECHING constructed a twelve-oared boat; it was 36 ft. long, and was the first self-righting Life-boat ever constructed. He also built one on the same plan for Boulmer, on the coast of Northumberland.

The first boat was purchased by the Ramsgate Harbour Commissioners, and it afterwards performed many gallant exploits, and saved a large number of lives. In a subsequent chapter some account will be given of her noble services.

He also built other boats of that class, but did not strictly follow the original design. Amongst them were two for the Shipwrecked Mariners' Society, which Society had placed some Life-boats on the coast. The two in question were stationed respectively at Lytham and Rhyl; but unfortunately those boats met with lamentable accidents in the year 1852.

There is no doubt that in both those cases the imprudent carrying of sail was the immediate cause of the

disasters, their sails being more adapted for racing than for storm sails ; besides the boats were faulty in their form, faulty in their fittings, and faulty in their mode of ballasting. The water ballast escaped by the pump-hole when the boats rolled, and the tank, not being full, became a shifting ballast, which, of course, is very dangerous in any boat.

The Lytham Life-boat was 28 ft. long, 7 ft. wide, $3\frac{1}{4}$ ft. deep, and had 25 cwt. of water ballast. The Rhyl boat was 26 ft. long, 6 ft. wide, 3 feet deep, and had 18 cwt. of water ballast.

At the time it was generally supposed that the boats were built after the prize model ; but it afterwards proved that such was not the case, there being material differences between them.

The Life-boat Committee not being altogether satisfied with BEECHING'S boat had previously requested Mr. PEAKE, one of their number, to go over the various competing designs once more ; and after careful examination to embody as many as possible of the good qualities of the best plans into a new design, by which it was hoped the errors of BEECHING'S plan might be overcome.

Such a boat was accordingly designed by Mr. PEAKE, and, by the authority of the Lords of the Admiralty, was built at Woolwich Dockyard at the expense of the Government, under Mr. PEAKE'S personal superintendence.

The first trial of it on the coast was made at Brighton, on the 3rd of February, 1852, in a strong south-west breeze. The Duke of NORTHUMBERLAND and several Naval Officers and others, along with a large body of the fishermen and boatmen of the place, watched the trial with much interest.

Its extreme length was 30 ft., length of keel 24 ft., breadth of beam 8 ft., and its depth $3\frac{1}{2}$ ft. It pulled

ten oars double-banked. It had side air-cases under the seats, and raised air-cases, 4 ft. long, in the extremes up to gunwale height, the tops being covered with a good coating of cork, to prevent their being stove if jumped upon. In order to free the boat of any water she might ship, 8 tubes closed by self-acting valves, passed through the deck and bottom. With the ballast of an iron keel of 7 cwt., the boat weighed 46 cwt. The draught of water was 15 in., and 18 in. with the crew on board. It was proved by this trial—

1. That when the boat had been hove keel up by a crane, she righted herself in five seconds.

2. That when light she entirely freed herself from water in fifty-five seconds.

3. That on taking the beach through heavy rollers the boat showed great buoyancy and stability, and brought her crew on shore without shipping water.

4. That she could carry thirty persons besides her crew, or forty-two in all.

Many modifications and alterations were made in this boat from time to time, after the numerous trials and experiments to which it was subjected, and ultimately it was completed and presented to His Grace, who had three others built similar to it at his own expense, besides the one on BEECHING'S design, with Transporting Carriages and Boat Houses complete, for the use of the fishing stations and shipwrecked crews on the coast of Northumberland.

After these boats had been tested on the coast by its Inspector of Life-boats, some of them in gales of wind and heavy seas, during the following winter, the NATIONAL LIFE-BOAT INSTITUTION proceeded cautiously to build others on the same plan; and this class of boat, with certain important modifications and

improvements in form, it has continued to adopt up to the present time—the Committee and its Officers having, however, incessantly laboured to introduce into the construction of the boats every improvement that modern science and actual trials in the heaviest storms could suggest ; so that the Life-boat of the Institution may now be truly designated an *omnium gatherum*, and cannot be looked on as any one man's design or invention.

In the year 1852, the '*Lifeboat*, or Journal of the National Life-boat Institution,' was first published, with the view of laying before the public all the information respecting the construction and establishment of Life-boats—the number of Shipwrecks—the exertions made to save Life and Property—and the prizes and medals awarded to those who had been most active in that noble service.

Prior to the year 1839, the "Royal National Institution for the Preservation of Life from Shipwreck" was the only Institution for the benefit of Shipwrecked Seamen whose sphere of action extended over the whole coasts of the United Kingdom ; but in that year the valuable Society termed the "Shipwrecked Fishermen and Mariners' Benevolent Society" was founded. That Society, in addition to its ordinary work of relieving the bodily wants of shipwrecked persons, and helping the families of deceased members, established a few Life-boat Stations on the coast ; but in 1853 it offered to hand over to the Life-boat Institution its Life-boat establishments, with the funds raised for their special support, provided the latter would alter its title, so as to prevent any misconception of their respective duties. Accordingly in 1854 "The Royal National Institution for the Preservation of Life from Shipwreck" agreed to alter its title to that of "THE ROYAL NATIONAL LIFE-

BOAT INSTITUTION, FOUNDED IN 1824 FOR THE PRESERVATION OF LIFE FROM SHIPWRECK." The two Institutions since that period have worked cordially together; the one in saving life, and the other in fostering it when saved.

The year 1856 was also a very eventful period in the history of the NATIONAL LIFE-BOAT INSTITUTION. The late Captain HAMILTON FITZGERALD, R.N., a previous liberal contributor to its funds, left it the munificent legacy of £10,000, and in no way restricted its application. The Committee, feeling deeply the confidence which this gallant Officer had reposed in them, decided to carry out his humane object by expending the whole amount, if necessary, in planting additional Life-boats on the coast. The result was a large increase in the number of its Life-boats, and, as a sequence, in the number of lives saved.

The Institution has, since then, through the liberality of the nation, been enabled to pursue vigorously its great work on the coast, and has, probably, made the most striking and remarkable progress on record, as far as the history of benevolent Societies is concerned. It has now a noble Life-saving Fleet of 242 boats under its management, and has, since its formation, contributed, by these and other means, to the saving of upwards of 22,000 lives from Shipwrecks on our coasts.

It is impossible to conceive the blessings thus conferred on countless families by the preservation of so many human beings from a watery grave.

And here it is only right to mention that in 1854, after the passing of the Merchant Shipping Act, the Board of Trade, being anxious to assist the Institution, as before stated, in the Preservation of Life from Shipwreck on our coasts, came to an arrangement with it, whereby, on

certain conditions, the Board undertook to repay from the Mercantile Marine Fund sums expended in payments of Coxswains' salaries and rewards to the crews of the Life-boats for going out in them, either on service or exercise.

Thus the Society was materially aided in its efforts to found new Life-boat Stations, and to improve the efficiency of the older establishments.

But at the close of the year 1869 its Committee, finding that the generous support of their countrymen was sufficient to maintain and work their Life-boat Fleet, and to meet all other requirements, and feeling confident that they could rely on a continuance of that support, felt it a public duty to decline any further assistance from funds raised by taxation ; and while heartily thanking the Board of Trade for the cordial and liberal co-operation which they had always afforded to the Institution, it relinquished any further assistance from the Mercantile Marine Fund.

In addition to the assistance that had been thus rendered to the NATIONAL LIFE-BOAT INSTITUTION by the Board of Trade, the efforts of that Department in organising Rocket Apparatus Stations on the coasts of the United Kingdom, and in the maintenance of the same in thorough working order, have been unceasing ; and this service contributes every year, under the zealous management of the Officers and men of the Coastguard Service, to the rescue of hundreds of persons from Shipwreck at places which, from their rocky nature, preclude the employment of Life-boats.

CHAPTER VI.

OUR SHIPPING TRADE—EXTENT OF OUR SEA-BOARD—A YEAR'S WRECKS
ON OUR COASTS—LIVES LOST—SHIPS LOST—LIVES SAVED—THE
WRECK CHART OF THE BRITISH ISLES FOR THE YEAR 1872
GEOGRAPHICALLY EXPLAINED.

IN order to have some conception of the character of the work of the Institution, we must have some idea of the number of the ships and amount of the commerce which annually reach and leave our shores, and the number of lives and value of the property thus exposed to the perils of the sea. As a rule "dry statistics" are well avoided; yet some attention to the following details respecting wrecks on the Coast must convey to an intelligent reader the absolute necessity for the organised system which the Institution has now so firmly established, and which has resulted in sailors of all nations, whose ships may be unhappily wrecked on our shores, having such confidence in the resources for their rescue. So strongly is this feeling often manifested that crews cling to their captains and ships while there is the least remnant of a hope of getting their vessels out of danger, and even at periods when the Life-boat men know by long experience the imminent risk the distressed sailors are incurring of losing their lives.

We find that in the year 1873 the number of vessels which entered inwards and cleared outwards from the ports in the United Kingdom, including repeated voyages

was 612,211, having a registered tonnage of 102,938,262 tons. We also learn from Returns published by the Registrar-General of Seamen, that on the 31st of December, 1873, the number of British Vessels registered, exclusive of River Steamers, was 20,799, having a total tonnage of 5,473,932 tons, and crews numbering over 200,000 men and boys. The value of the enormous commercial transactions in which these ships are engaged in one year is believed to represent about six hundred millions sterling.

It will also be interesting to know that the sea-board of England and Wales is 2,000 miles in extent, and that the Institution has on that length of coast 181 Life-boats; the Scotch Coast is 1500 miles in length, on which the Society has 30 Life-boats; while the length of the Irish Coast is 1400 miles, on which the Institution has 31 Life-boats.

As regards shipping disasters on our coasts, we find from the last Annual Wreck Register, published by the Board of Trade, that the number of wrecks, casualties, and collisions from all causes on and near the coasts of the British Isles in the year 1872, was 1,958, with the loss of 590 lives.

The number of vessels lost or damaged on these occasions was 2,381, representing a registered tonnage of 581,000 tons, and with crews to the number of 22,757 men and boys.

The number of vessels wrecked in 1872 had increased on the previous year by 392. It should here be explained that the number of ships represented in the wrecks, casualties, and collisions of the year, is greater than the number of actual casualties, inasmuch as in each of the 409 cases of collision, two or more vessels of course were involved.

Of the 2,381 ships, 1,878 are known to have been ships belonging to Great Britain and its dependencies, with British certificates of registry; and 430 are known to have been ships belonging to foreign countries and states. Of the remaining 73 ships, the country and employment are unknown. Of the British registered ships, 1,156 were employed in the British coasting trade, and 722 were employed in the (over sea) Foreign and Home trade. Of the ships belonging to foreign countries and states, 19 employed in the British coasting trade met with casualties.

Of the total number of wrecks, &c. (1,958), reported as having occurred in 1872 on and near the coasts of the United Kingdom, 409 were collisions, and 1,549 were wrecks and casualties other than collisions.

The bright spots of the Wreck Register are the services of the Life-boats of the NATIONAL LIFE-BOAT INSTITUTION and the Life-preserving Apparatus of the Board of Trade. To these, and other services in saving life, we were indebted for the rescue of 4,634 lives during the year; and no one can doubt that the larger share of peril and exposure fairly belongs to the crews of the Life-boats, the boats being mostly called on to render their assistance when all other kind of succour would be hopeless.

The annual average number of wrecks on the coasts of the United Kingdom reported in 1852-71, divided into four periods of five years, is as follows:—1852, 1,115; 1853, 832; 1854, 987; 1855, 1,141; 1856, 1,153. Total for the five years, 5,228, or an annual average of 1,045 wrecks. 1857, 1,143; 1858, 1,170; 1859, 1,416; 1860, 1,379; 1861, 1,494. Total for the five years, 6,602, or an annual average of 1,320 wrecks. 1862, 1,488; 1863, 1,664; 1864, 1,390; 1865, 1,656; 1866, 1,860. Total

for the five years, 8,058, or an annual average of 1,611 wrecks. 1867, 2,090; 1868, 1,747; 1869, 2,114; 1870, 1,502; 1871, 1,575. Total for the five years, 9,028, or an annual average of 1,805 wrecks

The following list shows the parts of the coasts on which the wrecks and casualties, on and near the shores of the United Kingdom in 1872 happened; it will be seen that the greatest number occurred on the East Coast. The numbers are as follows:—East Coast, 885; South Coast, 276; West Coast, 516; N. and W. Coast of Scotland, 44; Irish Coast, 198; Isle of Man, 20; Lundy Island, 9; Scilly Isles, 10.

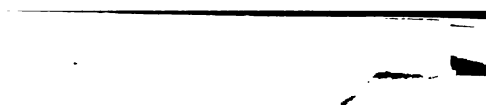
The sites of all these disasters are clearly shown in the accompanying Wreck Chart, which also denotes the positions of the Life-boat Stations of the Institution. The black dots which cluster all round the Chart, and which at certain points stand in dense groups, and then thin away to a single file, define the positions of the shipping casualties of the year 1872. They are thickest on the Eastern Coast. Beginning at the Firth of Forth, we find that the shores of that estuary have numerous dots, while the Bass Rock has a little group in its neighbourhood, and there is a thin sprinkling along the coast till we get to Hauxley, and thence to the mouth of the Tyne.

Here are the first considerable groups on this line of coast, followed by others off Sunderland, and at the mouth of the Tees, and then a considerable number along the rocky coast from Saltburn to Whitby. Scarborough and Filey then have a group of their own, while Flamborough Head and Bridlington show a large number of disasters.

The low-lying Yorkshire shore from Bridlington to Spurn Head shows but few wrecks, but off the Humber,







and along the coast of Lincolnshire as far as Theddlethorpe, there is another heavy list of casualties. Thence southward to Boston Deep, and round the Wash, they are not very frequent, but along the northward coast of Norfolk the casualties are rather numerous. A large group occurs just as the coast again trends to the south ; and all along the Eastern Counties, from Yarmouth to Dunwich and Misner Haven, the wrecks lie thick together. They are pretty frequent as we pass down to Harwich and along the Essex Coast, and the mouth of the Thames brings a large contribution to the roll of Shipwrecks. The coast of the Channel from the North Foreland to Dungeness Lighthouse, including the Goodwin Sands, is very thickly dotted, as usual, with the marks of destruction.

Along the South Coast the calamities are comparatively few. There is a small group at Beachy Head ; a few round the Isle of Wight ; Durlston and St. Alban's Head are also just spotted, and a large sprinkling lies round the Bill of Portland. From thence the beautiful coasts of Dorset and Devon seem almost clear ; there are, however, several dots off them in the Channel, and a few off the Start Point. We then get round to Plymouth, where they cluster again. The Eddystone, well marked out by its splendid Lighthouse, is no longer terrible ; but between it and the Breakwater is a distressing group of casualties. Then the coast is almost clear till Deadman's Point is reached and the Lizard is almost in sight, and then groups fringe the shore up to the Land's End. The northern coast of Cornwall is comparatively clear. There are a few round Lundy Island, some more near Ilfracombe, and many more as Weston is passed. As the important port of Bristol is approached, they largely increase, the Bristol Channel

furnishing one of the most dense groups in the year's Wreck Chart.

Considerable numbers are also seen on some portions of the Welsh Coast. The peninsula of Pembroke-shire is largely spotted round, and all along the Western Coast, from St. David's Head to Carnarvon Bay, the wrecks of the year had somewhat increased. They gather more thickly again round the Isle of Anglesea; and then, farther north, other large groups lie outside the mouths of the Mersey and the Dee, and along the Lancashire Coast 'as far as Southport. Thence northward the line is simply a broken chain of single spots, which gather rather thicker as we near the Clyde, and then die away till the whole of the Hebrides show but four—two on South Uist, one on North Uist, and the fourth at Northern Stornoway; while off the Orkney and Shetland Islands, we find that fourteen disasters occurred in the year; and on the North and East Coasts of Scotland, down to Anstruther, we count the sites of nearly sixty wrecks.

On the Northern, Eastern, and South-Eastern Coasts of Ireland, from Lough Swilly to Cape Clear, the work of destruction was somewhat busy, as is shown on the Chart, the marks clustering around the important ports of Belfast, Dublin, Waterford, and Cork; while on the whole of the West Coast of Ireland, which is not much frequented by ships, we find only seventeen wrecks.



CHAPTER VII.

OUR COAST LIFE-BOATS AND THEIR EQUIPMENT—DANGERS OF ORDINARY OPEN BOATS—QUALITIES NECESSARY IN A LIFE-BOAT—MODES BY WHICH EXTRA BUOYANCY IS OBTAINED AND THE SELF-DISCHARGE OF WATER IS PROVIDED FOR.

WE will now proceed to give some further explanations of the character and specialities of our coast Life-boats and their equipment, and more particularly of the famous, world-renowned, self-righting Life-boat of the NATIONAL LIFE-BOAT INSTITUTION, which has been pronounced by our hardy boatmen and fishermen who go afloat in her as the best and safest boat that was ever launched from our shores.

Although the word Life-boat has not in itself any definite meaning, it is generally understood as signifying a boat specially constructed for saving life in storms and heavy seas, when ordinary open boats could not attempt to do so except at the imminent peril or certain death to those within them.

What, then, are the causes which make ordinary open boats unsafe in rough seas? And in what manner are those causes removed in Life-boats?

The principal causes of a common open boat being unsafe in a heavy broken sea are, its liability to fill with water and swamp from a wave breaking into it, or by its upsetting, and loss of stability from all water within it

falling to one side with every motion of the boat. It is therefore obvious that the chief requirement of a Life-boat is the counteraction as far as possible of these defects.

The qualities necessary in a Life-boat may be thus summed up—we will remark on each in succession, and point out how far the boats of the Institution possess those qualities :—

1. Extra buoyancy.
2. Self-discharge of water.
3. Ballasting.
4. Self-righting.
5. Stability.
6. Speed.
7. Stowage-room.
8. Strength of build.

Extra Buoyancy.—The chief peculiarity of a Life-boat, which distinguishes it from all ordinary boats, is its being rendered unsubmergible, by attaching to it, chiefly within board, water-tight air-cases, or fixed water-tight compartments under a deck, or empty casks. This property, in one or more of the above forms, is common to all Life-boats, although some possess it in an inadequate degree, or badly distributed. So long as the necessary space for rowing and working the boat, and for the stowage of shipwrecked persons, is not interfered with, the amount of this “extra buoyancy” cannot be too great.

Extra buoyancy may intelligibly be defined as the excess of floating property in any body immersed in a fluid, the expression of which in pounds indicates the number of pounds’ weight of any other body that it is able of floating in addition to itself. Thus a log of fir, the specific gravity of which wood is about

half that of water, will float with only half its body immersed, the remaining half representing its extra buoyancy. A piece of dry fir wood has therefore extra buoyancy about equivalent to its own weight.

This important property in a Life-boat should be sufficient in amount to enable it to be loaded with people, and nearly filled with water, without its then being so deeply immersed as to be unmanageable.

Especially it is essential that the spare space along the sides of a Life-boat, within board, should be entirely occupied by buoyant cases or compartments; as when such is the case, on her shipping a sea, the water, until got rid of, is confined to the midship parts of the boat, where, to a great extent, it serves as ballast, instead of falling over to the lee side and destroying her equilibrium, as is the case in an ordinary open boat. Barrels or casks, which do not conform in shape to the sides of a boat, but leave large interstices to be occupied by water, are not suitable vehicles for providing extra buoyant power. The north country or Greathead class of Life-boats, of which those at Shields may be considered the type, have their extra buoyancy provided by a water-tight deck at the load-water line, the space between which and the boat's floor is formed into water-tight air-chambers; water-tight compartments are also built along the sides of the boat, within board, sloped from the gunwale to the deck thereby effectually excluding any water shipped from settling on one side. The excellent Life-boats designed by Messrs. LAMB & WHITE, of Cowes, which have been extensively supplied to ships and yachts, and to the Coastguard, have their buoyancy effected by similar air-compartments along the sides, extending from the gunwale to the boat's floor, but without any enclosed space under the deck. The large

sailing Life-boats on the Norfolk and Suffolk Coasts, which are admirably adapted to the work of going out to wrecks ashore on far outlying sandbanks — such being the special requirement of that part of the coast — have very wide detached air-boxes or tanks, strongly made, to correspond in form with the boats' sides, and extending from the thwarts to the floor ; but they have no deck. The Institution's Self-righting Life-boats have a water-tight deck at the load water-line, and detached air-boxes along the sides, from the thwarts to the deck. A great amount of extra buoyancy is also in these boats derived from large end air-cases built across their bow and stern, and occupying from 5 ft. to $6\frac{1}{2}$ ft. in length from the stem and stern posts to gunwale height. These cases are chiefly intended to provide self-righting power ; but in the event of the boat being stove in, and the space below the deck being filled with water, they alone have sufficient buoyancy to float her. Thus, in a 33 feet Lifeboat the buoyancy obtained by the end air-cases above the line of flotation is $4\frac{1}{4}$ tons ; in the side air-cases the buoyancy is equal to $1\frac{1}{2}$ tons ; and the buoyant space under the deck is equal to $5\frac{1}{2}$ tons.

Self-Discharge of Water.—The second peculiar characteristic of a Life-boat, and which is closely allied to the preceding, although it is not possessed by all Life-boats, is the capability of self-discharging in a few seconds any water which may be shipped by the breaking over of a sea, or by a boat being suddenly thrown on her beam-ends. Indeed, without this property, the full advantage of extra buoyancy is not realised, as without it all water breaking into a boat must remain in her, and become a shifting cargo, settling more or less on one side or at one end, with her every motion.

This self-discharging power is accomplished by means of the water-tight deck at the load-water-line, and a sufficient number of large open tubes, having their upper orifices at the surface of the deck, and their lower ones at the boat's floor, passing through the space between the deck and the floor, but hermetically closed to it ; thus providing an open communication between the interior of the boat and the sea, yet without suffering any leakage into the air-chambers under the deck. In some Life-boats these tubes are kept always open ; in others, plugs movable by hand, and having laniards or handles to them, are fitted, to be withdrawn on water being shipped. In the self-righting boats the tubes are fitted with self-acting valves, which open downwards only, so that they will allow any water shipped to pass downwards, whilst none beyond a trifling leakage can pass upwards through them. This valve is a simple plate, fitting the tube at its upper end, and made to turn on an axis on one side of its centre, as does an eccentric wheel. It is so balanced as of itself to remain shut, and on the slightest pressure of water from below, to shut still closer, whilst, on water falling on it from above, the pressure on the larger division of the plate, being necessarily greater than on the smaller, opens it downwards. Valves, unless self-acting and of very simple construction, are objectionable ; but these are found to answer admirably, and some which have been fifteen years in use are still efficient in the Life-boats of the Institution.

It will be at once readily understood that, as the deck is placed at or above the load-water-line, any water which is above it will be above the outside level of the sea with which it has through the valves and tubes a free communication ; and that, in obedience to the common law of fluids, which binds them to a uniform level, it

must instantly, by its own gravity, pass through the valves until none remains above the surface of the deck ; or, if the boat be very deeply loaded, until the level of the water outside, and of that within the boat, shall be the same.

This quality of self-relief of water can, of course, only be possessed in perfection in boats with a raised water-tight deck at or above the load-water-line.

Other Life-boats have no relieving holes at all, and, if filled by a sea, their crews have no resource but the primitive, slow, and laborious process of baling with buckets ; to do which the oarsmen must take in their oars, and, for a time, disable their boat.



CHAPTER VIII.

BALLASTING LIFE-BOATS—WOOD AND CORK BALLAST—YOUGHAL LIFE-BOAT—WATER BALLAST—THE NORFOLK AND SUFFOLK SAILING LIFE-BOATS — ACCIDENTS TO THE SOUTHWOLD AND GORLESTON LIFE-BOATS.

BALLASTING.—A third and important property in a Life-boat is ballasting. An ordinary open boat cannot with safety be taken into a heavy sea with metal, or stone, or other ballast having greater specific gravity than water, for if she were upset, or filled with a sea, she must then infallibly sink. As, however, a Life-boat is provided with a large amount of *extra* buoyant power, she may with impunity have a considerable amount of ballast of any description within her. We may here observe that ballast of some kind is very contributive to the efficiency of a Life-boat. Not only must it add to her stability, and thereby to her safety, but in proportion to the heaviness of the sea does weight become necessary to insure speed, its momentum being requisite to withstand the blow of each succeeding breaker, and to carry the boat through it as it strikes her ; in the same manner that the fly-wheel of a steam-engine or other machine, regulates and economises the motive power, and compensates for its irregular or intermittent action. The north country or Greathead Life-boats have generally no ballast, their great breadth of beam being relied on for

stability ; but some of them have water let into a tank, constructed for the purpose in the midships of the boat beneath the deck. BEECHING'S Life-boats were also ballasted with water on the same principle ; but through a difficulty in securing the filling of the tanks, and in preventing the escape of the water from them, serious accidents, accompanied by loss of life, occurred as before mentioned (p. 33) to two of those boats. The Institution's self-righting Life-boats are first ballasted with a heavy iron keel, which acts as a most powerful leverage. These iron keels vary in weight from 3 to 21 cwt. Ballast formed of air-tight cases, and of cork enclosed in water-tight cases, is also used in the self-righting Life-boats of the Institution, of nearly equal weight to the iron keel. Thus a ten-oared boat, 33 ft. long, has an iron keel of 8 cwt., and nearly the same weight of air-cases, and cases of cork stowed beneath the deck.

It is difficult for some persons to imagine that wood or cork can partake of the nature of ballast. It is, however, a fact that any substance heavier than air may be used as ballast, a pound of cork being as much ballast as a pound of iron or lead. The advantage of employing a ballast of less specific gravity than water is, that in the event of a boat being stove in, and the spaces below the deck filling with water, the extra buoyancy of the material then comes into play, and prevents the boat from being so deeply immersed as to become unmanageable.

In February, 1858, the Institution's Life-boat at Youghal, County Cork, in launching, got stove on a rock, and a hole was made in her floor as large as a man's head : she became at once deeply immersed, and the water rose to five or six inches above her deck, the spaces beneath it having filled with water ; nevertheless

she proceeded on her mission; and her gallant crew rowed her two miles to a wrecked Austrian ship, and in the midst of a very high surf, which frequently broke over and filled her, she took off fourteen men from the vessel's bowsprit, and conveyed them safely to the land. Had all her ballast been of metal, she would undoubtedly have become so deeply immersed after being stove, that she could not have proceeded to the wreck, and all on board must have perished.

As, however, a large quantity of fixed ballast causes great extra labour and difficulty in land transport and launching, water-ballast is occasionally employed. It is sometimes enclosed in water-tight tanks, but more frequently, as in the Norfolk and Suffolk boats, is unconfined.

In consequence of the liability of enclosed tanks to leak from decay or injury, and of the water thereby spreading over the whole floor of the boat, water-ballast has been discontinued in most rowing Life-boats.

With the exception of three or four of the old boats on the north country plan, which still retain water-tanks, the only boats in the United Kingdom now ballasted with water are some of the Norfolk and Suffolk Life-boats. These boats deserve especial notice. They are only nineteen in number, twelve of them being exclusively sailing-boats varying from 36 to 46 ft. in length, and from $10\frac{1}{2}$ to 12 ft. in breadth.

As those of the larger size are unmanageable in a heavy sea under oars, and as they have often to work to windward against the heaviest gales to the rescue of the crews of vessels wrecked on the numerous outlying banks which exist off that part of the coast, it is indispensable that they should be heavily ballasted, and have considerable draught of water, to give them good

weatherly qualities. In order, then, to make this requisite provision, without involving too much weight for convenient launching, they are provided with water-ballast, in addition to having iron keels. This water is let in by the same apertures that serve for self-relief of water, the plugs which close them not being withdrawn until the boat has got off the beach. The quantity of water thus let in is very great, being in the largest boat of this class not less than *seven tons*—which water is not retained in an enclosed tank, but left to fill every unoccupied space up to the level of the plane of flotation. This unoccupied space is chiefly confined to a narrow channel of about one-third of the boat's width. Cross air-cases at bow and stern, to the level of the thwarts, also confine it lengthwise. The average area of these channels is about 20 ft. long by 4 ft. wide, in which the water lies to an average depth of $2\frac{1}{2}$ ft., in amount equal to about 200 cubic ft., or $5\frac{3}{4}$ tons.

A great quantity of water also settles between the timbers of these boats, beneath the side and end air-cases, which cases are movable separate boxes, and which cannot be made to fit so closely as to fill up those spaces. These boats have also iron keels varying from 12 to 17 cwt.

At first thought it would appear highly dangerous to have so large a quantity of water loose within a boat: the truth is, however, that the safety of the principle consists in the largeness of the quantity, taken together with the circumstance of its being cut off from access to the ends and sides of the boat. If these boats were less heavily ballasted, they would be more lively, rising and falling with every motion of the sea, and the water within them would be constantly in motion towards the lowest but thus heavily weighted and propelled by

powerful sails, they cut deeply through every sea instead of rising to it—they, in nautical phraseology, make much worse weather of it than a lighter and a more lively boat would do ; heavy bodies of “green sea” break over them so as sometimes to altogether submerge their crews, and to hurl them from one end of the boat to the other, but their stability is so great that the boatmen have unbounded confidence in them, and are protected against being washed overboard by “ridge ropes” rove through iron stanchions round the boat, fixed in the gunwales.

The only boat of this class belonging to the NATIONAL INSTITUTION, which has ever upset was the Southwold Life-boat in February, 1858, the then most recently-constructed boat of the class. She was taken out, through a rather high surf, for the quarterly exercise of her crew. On returning to shore, before entering the surf, the crew injudiciously inserted the plugs, and pumped out about two-thirds of the water-ballast. They then ran her under sail, with too much way, into the surf, when a sea overtaking her, threw her stern up ; the ton and a half of water still in her then rushed to the bow, which became completely submerged, and, broaching-to across the surf, she immediately upset. Her masts broke off on coming in contact with the ground, and not being a self-righting boat, she remained keel up. Her crew of fifteen men, all having on their life-belts, in accordance with the rules of the Institution, were saved ; but three gentlemen—who had gone off as amateurs, and had refused to put on life-belts which had been offered to them—were drowned, although one at least of them was known to be a good swimmer. Had this boat been full ballasted, the sea would probably have broken over the stern instead of lifting it, and the accident would not

then have occurred. She has, however, since that period been ballasted with blocks of wood.

The Gorleston private Life-boat built on this principle also upset in January 1866, and in December 1867, and thirty-eight lives were lost out of the fifty-two thus endangered.



CHAPTER IX.

THE SELF-RIGHTING PRINCIPLE IN LIFE-BOATS—MODE BY WHICH IT IS SECURED—BALLAST—RAISED AIR-CHAMBERS AT BOW AND STERN—LIMITED BEAM—LIMITED SIDE-BUOYANCY—THE OBJECTIONS URGED AGAINST THE SELF-RIGHTING PROPERTY REFUTED—RESULTS OF THE ADOPTION OF THAT PRINCIPLE IN THE LIFE-BOATS OF THE INSTITUTION—ACCIDENTS TO LIFE-BOATS SINCE THE YEAR 1849.

SELF-RIGHTING.—We come now to the fourth property, that of self-righting if upset. This, although a most important principle, is not universal in Life-boats, and twenty-one out of the 242 Life-boats of the Institution do not possess that quality.

Some boat-builders and others have objected to it, under a misapprehension that other more necessary qualities, and especially that of stability, are sacrificed to it. So far, however, from this being the case the very means which are employed to produce self-righting add to the stability of the boat, and improve her in other respects; and an acquaintance with the principles by which the self-righting property is obtained would soon dissipate any such mistaken views.

It is a singular fact that this property which, when proposed in 1850 as one of the requisites of a good Life-boat, was almost treated with derision by some of our best boat-builders, should have been acknowledged and publicly exhibited at Leith by the Rev. JAMES

BREMNER, of Walls, Orkney, as far back as July, 1800. He first proposed in 1792 to enable all ordinary boats to self-right by placing two water-tight casks parallel to each other in the head and stern sheets, and by attaching 3 cwt. of iron to the keel. A boat thus fitted was publicly tried at Leith and repeatedly righted, for which a piece of plate was awarded to Mr. BREMNER, and in 1810 the Society of Arts voted him a silver medal and twenty guineas. Yet in 1850, half a century later, the practicability of making a boat right herself was almost derided !

The real difference between an ordinary and a self-righting boat is, that whilst the former, on being thrown by a sea or other force on one side, beyond a certain angle, offers no further resistance, and cannot return ; the latter, on the contrary, continues to oppose such a force in every position in which it can be placed, unless nicely balanced with its keel exactly above the centres of gravity and motion, or, in nautical *parlance*, " keel up," a position in which it could not even momentarily remain in a rough sea.

The self-righting power is obtained by the following means :—1st. The boat is built with considerable sheer of gunwale, the bow and stern being from 1 ft. 6 in. to 2 ft. higher than the sides of the boat at her centre ; and the space within the boat at either extremity, to the distance of from 4 to $6\frac{1}{2}$ ft. from the stem and stern posts, to gunwale height, is then enclosed by a sectional bulkhead and a ceiling, and so converted into a water-tight air-chamber, the cubical contents of which, from the thwarts upwards, are sufficient to bear the whole weight of the boat when she is placed in the water in an inverted position, or keel upwards. 2ndly. A heavy iron keel (from 15 to 21 cwt.) is attached, and a nearly equal weight

of light air-cases, and cork ballast cases is stowed betwixt the boat's floor and the deck. No other measures are necessary to be taken in order to effect the self-righting power. When the boat is forcibly placed in the water with her keel upwards, she is floated unsteadily on the two air-chambers at bow and stern, whilst the heavy iron keel and other ballast being then carried above the centre of gravity, an unstable equilibrium is at once effected, in which dilemma the boat cannot remain, the raised weight falls on one side or the other of the centre of gravity, and drags the boat round to her ordinary position, when the water shipped during the evolution quickly escapes through the relieving tubes, and she is again ready for any service that may be required of her.

We will now point out how far any sacrifice has been made to secure the self-righting property.

Its requirements are :—

1. Ballast.
2. Enclosed air-chambers at bow and stern, placed sufficiently above the centre of gravity.
3. Limited breadth of beam.
4. Limited side buoyancy.

1. *Ballast*.—Now the first of these requirements, ballast, is a positive source of safety. It necessarily increases lateral stability, and, by adding to the weight of a boat, gives a greater momentum when rowing against a high broken sea ; which is often a source of safety, as she may thereby pass safely through or over a sea, instead of being driven astern by it. From the same cause, also, she can be more readily held back, and be prevented from “running” on a sea when returning to the shore, which is one of the greatest dangers that a boat can encounter.

2. *Raised Air-Chambers.*—The second requirement, raised air-buoyancy at bow and stern, is a great source of safety, by preventing all water or other weights from settling at either extreme end of a boat, and also by preventing much water from breaking over the bow or stern.

It will be readily conceived how advantageous it must be, on a heavy sea breaking over the bow of a boat, to have a buoyant power equivalent to more than a ton weight instantly resisting submersion. When placed under such circumstances, one of the north country Life-boats would take half a ton of water into the bow from a single surf, where a good self-righting boat would scarcely ship a bucket-full.

3. *Limited Beam.*—There is no doubt that great breadth of beam is a source of safety, as giving increased stability, and that some sacrifice of beam is required for self-righting. But great breadth of beam involves loss of propulsion against a heavy sea, which is often loss of safety, and requires the use of longer oars with more men to work them, all which are disadvantages. A self-righting boat with limited beam (say one-fourth of length) has, therefore, the advantage over the wider boat in these respects, whilst the loss of stability from diminished beam is made up for by an equivalent stability derived from ballast.

4. *Limited Side Buoyancy.*—Again, some sacrifice of stability is made by a reduction of side buoyancy, but it is the only real sacrifice, and is more than made up for by the gain of the self-righting power.

We will now proceed to note the results of its adoption, as shown by the relative loss of life which has been occasioned by accidents to Life-boats possessing that property, and to those which did not.

Since the first self-righting Life-boat was stationed on the coast in 1852, 35 boats of that class have upset, on board of which were 401 men; and of that number 25 only lost their lives, being in the proportion of only 1 to every 16 lives risked. The accompanying tabulated list of the capsizes of self-righting Life-boats gives the details in each case, and shows that in 26 out of the 35 accidents there was no loss of life whatever.

On the other hand, since the year 1849, when the Shields Life-boat was capsized, at least 8 Life-boats of other kinds have upset on our coasts, on board which there were 140 men, no less than 87 of whom have been drowned, being in the proportion of nearly 2 out of every 3 lives risked—loss of life having resulted in all but one of those cases.

The contrast between these results of accidents to the two classes of boats is so extraordinary that it must speak for itself; lest, however, it should appear that the number of self-righting boats that have upset has been excessive, it must be borne in mind that, although the actual number that have done so is greatly in excess of the number of similar accidents to other classes of boats, yet that, in proportion to the number of boats in use of each class, the relative number has been very much less. Moreover, the self-righting boats belonging to the Institution are taken afloat for exercise four times every year, often in heavy surfs, and nearly half of those which have been upset have been so when out for exercise; whilst, on the other hand, the other classes of Life-boats, the greater number of which are not in connection with the Institution, have not been taken afloat for exercise, and consequently have, in comparison, much less frequently incurred the risk of accident.

Apart, however, from the prognostication that such

boats would be more unsafe than the previously existing classes of Life-boats, there were three special objections made to them ; and the fact will not be thought to be without interest that experience has proved the fallacy of each :—

In the first place, it was predicted that, owing to their great buoyancy, and their high ends, at bow and stern, they would hold so much wind that they would never be propelled against a heavy sea and a strong gale. The reply, in this the twenty-second year of their career, is, that they have since been launched in gales of wind many thousands of times, and have saved several thousand lives, and that their failures to effect their object have been so few that we shall probably be within the mark if they are estimated at once in fifty times that their services have been required. It must also be remembered that in heavy gales of wind in some localities, there are often broken seas of such magnitude that no boat in existence could be taken into them without certain destruction.

Secondly—It was foretold that the self-righting property would be of no service, as their crews, after being thrown out of them, would never be able to regain them ; since, being so high out of the water, and holding so much wind, they would speedily be carried to leeward beyond the reach of the unfortunate persons who had been suddenly ejected from them.

The reply to this supposition is, that in only one of the thirty-five cases just quoted, has the Life-boat been carried to leeward of the crew, and they prevented from regaining her ; and that, even when upset under sail, and with the sheets fast, they have righted again, and their crews have regained them without the loss of a single life. The exceptional case was that of the Padstow

Life-boat, which was upset by an enormous sea three-quarters of a mile from the shore, when, being thrown *end over end*, the stern perpendicularly over the bow, and the men being all thrown out, she was carried at once to leeward of them by the same sea by which she was upset, so that they were unable to regain her; whereas, in every other instance, the boats having been upset more or less on the broadside, those in them have been thrown out to leeward; and in nearly every instance one or more of the men have remained in them, and have then been able to assist the others to get in.

Thirdly—It was said that, although the men working the boats, being provided with good life-belts, might be able to regain them, any unfortunate wrecked men who might be in them, having no belts, would be drowned. Again, however, as in the other cases, theory has not been borne out by fact, for, happily, in one instance only has a Life-boat belonging to the Institution been upset with a wrecked crew on board, and in that instance no life was lost—a circumstance for which we cannot be too thankful, since undoubtedly even the self-righting property itself would not have shown such splendid results, if the Institution had not provided its Life-boats' crews with the best description of life-belts to support them in the water until they were able to regain their boats. The case referred to is that of the Penmon Life-boat, which had a wrecked crew of five men on board when upset in March, 1868.

The two following tables show all the recorded instances of Life-boats upsetting that have occurred on the coasts of the United Kingdom since the year 1849. Table I. exhibits those of the self-righting Life-boats, and Table II. those of Life-boats which would not self-right.

TABLE I.—A TABLE showing the NUMBER of SELF-RIGHTING LIFE-BOATS that have been Urset, and the LOSS of LIVES occasioned thereby, from 1852 to 1874

Number.	STATION OF LIFE-BOAT.	Dimensions.		No. of Oars.	Date.	Number of Men on Board.	Number of Lives Lost.	Under Oars or Sails.	On Service or Exercise.
		Length.	Width.						
1	Lyme Regis	feet. 27	feet. 7½	8	1854. 7 Jan.	11	1	Alongside a Vessel.	Service
2	Dungeness	28	6	6	1858. 19 Oct.	8	Nil.	Oars . .	Service
3	Aldborough	32	8½	12	1859. 21 Dec.	15	3	Warping-out.	Service
4	Armore	28	6	6	1860. 6 Nov.	10	Nil.	Oars . .	Exercise
5	Tramore	30	6½	6	1861. 17 Feb.	8	Nil.	Oars . .	Service
6	Scarborough	33	8½	10	1862. 14 April	14	Nil.	Oars . .	Exercise
7	Aberdovey	30	6½	6	1863. 8 Dec.	8	1	Oars . .	Exercise
8	Howth	30	7	6	20 March .	8	Nil.	Sails . .	Exercise
9	Berwick-on-Tweed . .	30	7½	10	29 March .	14	Nil.	Oars . .	Exercise
10	Silloth	30	7	6	21 April .	8	Nil.	Sails . .	Exercise
11	Blakeney	30	7	6	19 May .	8	Nil.	Oars . .	Service
12	Holyhead	36	8½	12	1865. 14 Jan.	13	1	Sails . .	Service
13	Arklow	36	8½	12	19 March .	16	Nil.	Oars . .	Service
14	Ferryside	30	7	6	26 Oct. .	9	Nil.	Sails . .	Exercise
15	St. Ives	30	6	6	28 Oct. .	9	Nil.	Oars . .	Service
16	Lizard	30	6½	6	1866. 2 Jan.	10	3	Oars . .	Exercise
17	Groomsport	28	6	6	8 March .	9	Nil.	Oars . .	Exercise
18	Fraserburgh	30	7½	10	8 Dec. .	12	Nil.	Oars . .	Exercise

Continued.

TABLE I.—A TABLE, showing the NUMBER of SELF-RIGHTING LIFE-BOATS that have been UNSET, and the LOSS OF LIVES occasioned thereby, from 1852 to 1874—continued.

Number.	STATION OF LIFE-BOAT.	Dimensions.		No. of Oars.	Date.	Number of Men on Board.	Number of Lives Lost.	Under Oars or Sails.	On Service or Exercise.
		Length.	Width.						
19	Padstow	32	feet. 7½	10	1867. 4 Feb. .	13	5	Oars . .	Service .
20	Llandudno	32	7½	10	7 Feb. .	13	Nil.	Sails . .	Service .
21	Seaton Carew	30	7½	10	16 March .	13	Nil.	Oars . .	Exercise
22	Exmouth	32	7½	10	26 March .	9	Nil.	Oars . .	Exercise
23	Walmer	37	8½	12	1 Dec. .	15	Nil.	Sails . .	Service
24	Penmon	28	6½	6	1868. 23 March .	14	Nil.	Oars . .	Service
25	New Brighton	32	7½	10	2 April .	13	Nil.	In tow .	Exercise
26	Hunstanton	32	7½	10	8 April .	12	Nil.	Sails . .	Service
27	Porthcawl	30	7½	6	22 Aug. .	10	Nil.	Sails . .	Service
28	Penzance	30	6½	6	6 Dec. .	14	Nil.	Oars . .	Exercise
29	Newquay (Cornwall)	30	7½	6	22 Dec. .	12	Nil.	Oars . .	Exercise
30	Ballyvalter	32	7	10	26 Dec. .	12	1	Sails . .	Exercise
31	Appledore (Bideford)	34	7	12	28 Dec. .	14	Nil.	Oars . .	Service
32	New Brighton	32	7½	10	1870. 2 April .	12	Nil.	In tow .	Exercise
33	Clovelly	33	8	10	1871. 14 Jan. .	13	Nil.	Sails . .	Exercise
34	Skerries	32	8	10	1873. 1 Feb. .	10	6	At anchor .	Service
35	Stonehaven	33	8½	10	1874. 27 Feb. .	12	4	Oars . .	Service
Total							25		

TABLE II.—A TABLE, showing the NUMBER OF COAST LIFE-BOATS UPSET which would not SELF-RIGHT, and the LOSS OF LIVES occasioned thereby, from 1849 to 1874.

Number.	STATION OF LIFE-BOAT.	Dimensions.		No. of Oars.	Date.	Number of Men on Board.	Number of Lives Lost.	Under Oars or Sails.	On Service or Exercise.
		Length.	Width.						
1	Shields	ft. 33	ft. 11	12	Dec., 1849	24	20	Oars . .	Service
2	Point of Ayr	27	8½	10	Jan., 1857	13	13	Oars . .	Service
3	Southwold	40	11½	12	Feb., 1858	18	3	Sails . .	Exercise
4	Liverpool	30	9½	12	Jan., 1855	11	7	In tow .	Service
5	Gorleston	42	12	12	Jan., 1866	17	13	Sails . .	Service
6	Margate	33	6¾	12	Jan., 1866	13	Nil.	Sails . .	Service
7	Gorleston	42	12	12	Dec., 1867	35	25	Sails (run down).	Service
8	Bridlington Quay . . .	27	6½	8	Feb., 1871	9	6	Oars . .	Service
						Total . .	87		

NOTE.—The above Life-boats, with the exception of that at Southwold, were not under the Management of the NATIONAL LIFE-BOAT INSTITUTION.

CHAPTER X.

ESSENTIAL QUALITIES REQUIRED IN LIFE-BOATS—LATERAL STABILITY,
OR RESISTANCE TO UPSETTING—RICHARDSON'S TUBULAR LIFE-BOAT
—SPEED AGAINST A HEAVY SEA—STOWAGE-ROOM FOR PASSENGERS
—STRENGTH OF BUILD—MATERIALS OF WHICH LIFE-BOATS ARE
CONSTRUCTED.

STABILITY.—The next quality, which is of essential importance in a Life-boat, is lateral stability, commonly called stiffness, being the tendency to preserve an upright position in the water, and proportionate resistance to upsetting sideways. This property is, of course, held in common by all boats, but is more especially essential to Life-boats, they being more exposed to the risk of upsetting than any others.

Stability may be obtained by three modes :—1st. By great breadth of beam ; 2nd. By occupying the interior with air cases, as described already, in such a manner as to leave no space for water to remain in the interior, into whatever position the boat may be thrown, or so to confine it to her central part that it cannot fall much to one side above the centre of buoyancy ; and 3rd. By ballast.

In the self-righting Life-boats of the Institution very great stability is obtained by an iron keel, and other ballast, and by flatness and length of floor, with moderate beam only.

RICHARDSON'S Tubular Life-boat has a great amount of stability, as will be seen by the following brief account of that boat. It is altogether different in principle to any other boat, and consists of two long tubes running parallel to each other a few feet apart, having their ends turned upwards and inwards, and terminating in points, with an open-work or grating-deck with corresponding thwarts, all supported above the tubes. It was designed and brought out by Messrs. H. & H. T. RICHARDSON, two Welsh gentlemen, father and son. They had for many years a small boat of the same class in use on a lake in Wales, and when the Duke of NORTHUMBERLAND offered the prize for the best design of a Life-boat in 1850, they sent a model to compete for it. With much public spirit they then built at Manchester a full-sized boat, forty feet long, and rowing fourteen oars, and made a coasting voyage in it themselves from Liverpool to the Thames, putting into most of the intermediate ports.

The Tubular Life-boat, built by the Messrs. RICHARDSON in 1851, was afterwards sold by them to the Portuguese Government, to be stationed at the City of Oporto, off the port of which there is a very dangerous bar.

Another somewhat smaller tubular boat was, in 1856, built for the NATIONAL LIFE-BOAT INSTITUTION, and stationed at Rhyl, the boatmen at that place having applied for such a boat. She has since that time saved several wrecked crews, and has been highly reported on by those who work her. She has necessarily very great stability, and tows steadily.

Another such boat has been stationed by the Institution at New Brighton, and has done good service in saving life and property. Mr. RICHARDSON, Sen., died

many years ago ; but his son's interest in the humane work is unceasing.

Speed.—A sixth and most essential property is speed. We say most essential, since without speed, or capability of being propelled against a heavy sea and head wind, the safest boat in the world would be useless, as she could not be conveyed from the shore to a wreck, frequently against a series of breakers of the most formidable description. As in ordinary boats, propelled by oars, the greatest speed can be obtained by sharpness of bow, and, within certain limits, narrowness of beam. Here, however, the similarity ceases ; for whereas great lightness is an advantage in perfectly smooth water and calm weather, weight—as stated under the head of *Ballasting and Self-righting*—is essential in a heavy sea, and especially in a broken sea, in which the light boat will lose her way, or be beaten back by each heavy sea as it strikes her, whilst the heavier boat will be, by her own inertia, carried away through or over the seas. In a Life-boat height of bow and stern is also necessary to prevent the seas from breaking over and filling the boat ; for, if sharpness of form be preserved quite up to the gunwale, the height of end will not check a boat's way so much as will a sea breaking into and half-filling her.

Again, the greater the length of a boat in proportion to area of midship section, weight being the same, the greater will be her momentum, and the faster will she be propelled against a head sea. The proportion of four feet of length to one foot of width of midship section is that which is adopted by the NATIONAL LIFE-BOAT INSTITUTION in its double-banked rowing-boats. In its few single-banked boats, which are stationed at places where

larger and heavier boats could not be managed, still less proportional width is given.

Speed is not, however, alone essential in enabling a Life-boat to force her way through the lines of breaking seas which form an almost impassable barrier between a lee shore and a wreck ; we believe that it also adds greatly to her safety ; for if she lose her way on meeting a very heavy broken sea or roller, she may not only be beaten back by it, but be thrown *end over end* or broadside to it, and be upset ; whereas if she retain her way, she can be kept bow to the sea until it has passed her, when she will again gather additional speed in readiness to meet with impunity the succeeding wave.

Stowage-room.—A seventh quality is stowage-room for passengers. It is of course desirable that a Life-boat should have as large an amount as possible of stowage-room, as she is occasionally called on to go to the aid of large vessels or to proceed to the wreck of an emigrant vessel, or other passenger ship, when it is important that she should take on board a large number of persons so as to rescue the whole in as few trips as possible. The principal object in view therefore is to distribute the air-chambers, forming the extra buoyancy of the boat, in such a manner as to occupy no more than can be helped of any space which would be available for the stowage of passengers. Life-boats vary much in this respect, and it is a requirement which has been especially studied in the Institution's boats.

Strength.—The eighth and last quality which we have to consider is strength. As a Life-boat is liable to be thrown heavily on a beach by the sea, or to be knocked with violence against rocks or a vessel's side, or to come

in contact with spars or broken wreck floating in the water, she of necessity must be very strongly built ; and in this respect the Society's boats will bear most favourable comparison with any others, as we have previously shown.

In connection with the last-named condition we may here state that most of the old classes of Life-boats are clinker or clench built, and of oak ; while the self-righting boats of the Institution are mostly built of mahogany, on the diagonal principle, which mode of build affords great strength and elasticity.



CHAPTER XI.

THE SELF-RIGHTING LIFE-BOAT NOW IN USE ON OUR COASTS—WORKING AND SECTIONAL DRAWINGS AND DESCRIPTION OF THE BOAT—ITS IMPORTANT QUALITIES—SPECIFICATIONS FOR THE CONSTRUCTION OF A 33-FEET LIFE-BOAT ON THAT PLAN.

THE following figures show the general form, the nature of the fittings, and air-chambers, of one of the modern self-righting Life-boats of the Institution, 33 ft. in length and 8 ft. in breadth. In figs. 1 and 2, the elevation and deck plans, the general exterior form of the boat is shown with the sheer of gunwale, length of keel, and rake of stem and stern-posts.

The festooned lines in fig. 1 represent exterior life-lines attached round the entire length of the boat, to which persons in the water may cling till they can be got into the boat ; the two central lines are festooned lower than the others, to be used as stirrups, so that a person in the water, by stepping on them, may climb into the boat without assistance. In one word, this Life-boat possesses in the highest degree all the qualities which it is desirable that a Life-boat should possess :

1. Great lateral stability or resistance to upsetting.
2. Speed against a heavy sea.
3. Facility for launching and taking the shore.
4. Immediate self-discharge of any water breaking into the boat.
5. The important advantage of self-righting if upset.
6. Strength.
7. Stowage-room for a large number of passengers.

SHER PLAN.

FIG. 1.



FIG. 2.



DECK PLAN

To face p. 72.

WORKING DRAWINGS OF THE LIFE-BOT OF THE NATIONAL LIFE-BOT INSTITUTION.

THE FOLLOWING ARE SPECIFICATIONS OF THE 33-FEET
LIFE-BOAT OF THE INSTITUTION.

PRINCIPAL DIMENSIONS.

	ft.	in.
Length extreme from fore side of stem to aft side of stern-post .	33	0
Length of keel wood	29	6
Breadth extreme from out to out	8	0
„ at midship line of after thwart	7	7
„ at midship line of fore thwart	7	0
„ at end of each raised air-case	5	9
„ at one-sixth the length from either extreme	5	4
Depth amidships from under side of iron keel to upper edge of gunwale	4	0
„ of stem and stern-post	6	4
„ of keel below the rabbet wood	0	2
„ from lower edge of iron keel to upper part of flat or deck	2	1
„ from inside of skin to upper side of deck	1	6
„ from upper side of deck to upper side of thwart	1	2
„ from upper side of thwart to gunwale amidships	0	9
Sheer of gunwales	2	4
Proposed load draught of water, that is, with crew and stores on board	1	10
Displacement at load draught	4½	tons.
Proposed weight of boat when light	53	cwt.
Number of oars to pull double-banked	10	

THE MATERIALS, SCANTLING, ETC., TO BE AS FOLLOWS :—

The boat to be diagonally built, and copper fastened.

Planks, two thicknesses of bare ½-in. mahogany, as shown diagonally with painted calico between them.

Keel to be of American elm, in one piece, sided amidships 3½ in., moulded 5½ in., and at each end 3 in., scarphed to the stem and stern post.

False keel to be in one piece of cast iron 3½ in. in width by 4½ in. deep, fayed to the main keel, and bolted with screw nut-bolts of ½ in. diameter, the nut to screw down on keelson, to be moulded as per draught. Whole weight 9 cwt.

Stems, to be in one piece of sound English oak, sided at the head 4 in., at the forefoot the size of the keel, and moulded as per draught ; to have

two holes through the forefoot, fortified on each side by an iron plate, to take a bolt or rope for hauling the boat up the beach or on to the carriage.

An iron roller $2\frac{1}{2}$ in. diameter, to receive the cable, to be let into the stem-heads between cheeks, as shown in sketch.

Stem-bands of $\frac{1}{2}$ in. iron, worked from the butt of iron keel.

Floors to be of ash or oak $2\frac{1}{2}$ in. by $1\frac{1}{2}$ in. Room and space to be 2 ft.

Gunwale to be $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in., worked in one length of American elm, to be well secured, and to have holes and plates to receive thole-pins.

Fender to be $2\frac{1}{2}$ in. deep by $7\frac{1}{2}$ in. moulded, of American elm and fir, worked as shown on draught, fastened with 3-in. screws from inside.

Thwarts to be 5 in number, 2 ft. 9 in. apart, 8 in. broad, by $1\frac{1}{2}$ in. thick ; after-one to be $4\frac{1}{2}$ ft. from the after-end air-case ; fore-one 2 ft. from the fore-end air-case.

A carling 3 in. by $2\frac{1}{2}$ amidships on top of thwarts, secured with screw bolts and nuts.

Risings, under the thwarts, to be of American elm $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in. ; those under the flat at the sides to be $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in.

Deck to be $\frac{3}{4}$ in. thick, of well-seasoned mahogany, and well caulked.

Trunks to receive the relieving tubes to be framed of $1\frac{1}{2}$ mahogany, with arris cant in the angles, and the depth from deck to bottom of boat, and placed as shown on plan, to be secured from the outside and the thwartship bearers.

Bulkheads and bearers to be $1\frac{1}{2}$ in. thick, and placed as shown on draught, and have a limber hole $1\frac{1}{2}$ in. square, cut on each side of keelson for a water-course leading to the well.

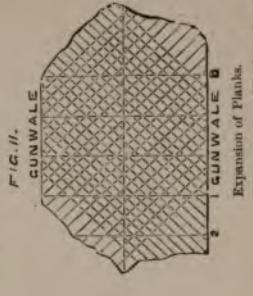
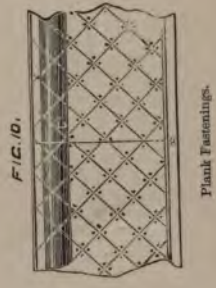
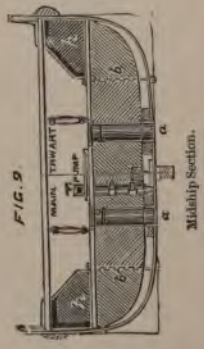
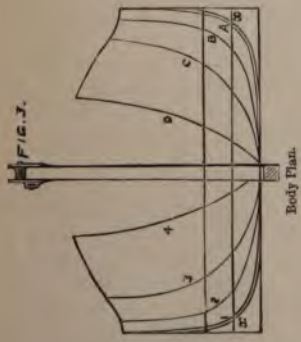
Fore-and-aft, or middle line bulkhead, to be 1 in. thick of fir, on top of keelson, and at 2 ft. 4 in. from middle line at the height of deck.

Ballast, under flat, to be of cork packed in cases covered with marine glue and calico, ironed over, filling the space beneath the deck between the bulkheads, as in sketch (b).

Delivering tubes *a*, to be 6 copper tubes of 6 in. diameter in the clear, carefully fitted into the trunks and turned on the deck, bedded in hot tallow ; the copper to be 24 ozs. to the foot and to have an inch flange on the outside of the bottom of the boat.

Self-acting valves of gun-metal, made by DARLING, 9 Queen Street, Blackfriars Road, to be let into the top of the relieving tubes, the flanges bedded in white lead and screwed down. No dirt or chips should be allowed to get into the hinges, and on this account they should not be fixed until all the other work in the boat is completed.

End air-cases to be framed with a $1\frac{1}{2}$ in. cant of English elm, a $\frac{3}{4}$ in. rabbit taken out to receive the board (which must be all matched, or tongued and grooved), and all faying surfaces to be well payed with white lead or thick paint ; to have two screw valves let into the cant that comes on the deck from the outside, as shown in sketch. A coat of Jeffery's marine glue is to be laid on the top of the end air-cases, and then covered with canvas, and



SECTIONS OF THE LIFE-BOAT OF THE NATIONAL LIFE-BOAT INSTITUTION.

To face p. 74.

the glue to be ironed through the canvas with a hot iron ; above this a layer of cork 1 in. thick to be laid on with marine glue, to be nailed, and well rubbed down, and the pores of the cork filled with bees'-wax and varnish thoroughly rubbed in.

Side air-cases to be made of $\frac{3}{4}$ in. yellow pine, the ends to be of $\frac{1}{2}$ in. English elm, the outsides to be payed all over with marine glue, then covered with canvas, to be ironed on with hot irons. The number, length, and shape of side air-cases to be as shown in the drawing. They are to be secured in their places by cleats of wood 6 in. long, $1\frac{1}{2}$ in. square ; at the junction of each two cases screwed on to the deck by thumb-screws, so as to be readily removed when required.

Three battens of fir, $2\frac{1}{2}$ in. wide by 1 in. thick, to be carried fore and aft at each side on top of thwarts, at 4 in. from the side, with a $3\frac{1}{2}$ in. space, to protect the air-cases.

A platform-grating, for the two steersmen to stand upon, to project 2 ft. from the after-end air-case, to be 10 in. high at the outer part, and to be secured to the deck by thumb-screws, so as to unship when required. The grating to be hollowed out in the front of the valve in the end case.

Rudder as in draught, hung so as to fit close to stern-post, and lower pintle to be the length as shown ; rudder to be fitted with wooden yoke and tiller, and a tricing line to be rove through a sheeve in the stern-post, as shown in sketch.

Timber heads, of English oak $5\frac{1}{2}$ in. square, to be fitted on each quarter, as shown in the drawing.

Norman or Bollard timber for towing, or riding at anchor, to be 7 in. square, and to be fitted as per drawing.

The boats to be planked from gunwale to gunwale as far as convenient to bend the planks, as shown in sketch of expansion of plank.

Stretchers of fir, 4 in. wide, to be raised 3 in. off the deck, and fitted sloping.

Oars to be made of good sound fir or ash, 10 in number, with 5 spare oars ; to be 5 in. wide in the blades.

Boat-hook staves to be made of ash, 2 in number, and 14 ft. long.

Crutches to be formed on thole-pins of iron, 1 in. iron thole-pins, 6 in. long, to be fitted into the gunwale, and secured by a forelock ; 10 in number, with 5 spare pins.

A pillar to be placed under each thwart to give the spring, to be turned out of $1\frac{1}{4}$ in. fir.

A ringbolt in the deck forward to lash cable and anchor to.

Sweep oars of fir, 2 in number, 19 $\frac{1}{2}$ ft. long, eyebolts for life-lines, &c., to be fitted as required.

Hatch-coamings to be of $1\frac{1}{2}$ in. teak, to be raised 3 in. above the deck. The hatches to be fitted water-tight by being lined in the rabbet with fear-nought kept greased. The aperture in the hatch for the pump to be made tight in the same manner. The hatches to be each secured by an iron bar, as shown in sketch.

Pump to be fitted as shown in the section, Fig. 9 ; it is intended to relieve the boat of any water that may have leaked into the spaces beneath the deck.

NOTE.—Messrs. FORRESTT & SON, of Limehouse, London, have built altogether for the Institution and Foreign and Colonial Governments 337 Life-boats on the self-righting principle ; and Messrs. WOOLFE & SON, of Shadwell, London, 62 Life-boats of the same class.



CHAPTER XII.

MODES OF PROPELLING LIFE-BOATS—PROPOSED USE OF STEAM IN COAST LIFE-BOATS—THE BEST MODE OF UTILISING MANUAL POWER FOR THE PROPULSION OF LIFE-BOATS—PADDLES WORKED BY HAND POWER IN COVERED LIFE-BOATS—ADVANTAGES OF OARS—ROTARY PROPELLERS.

HAVING thus fully described the self-righting Life-boat of the Institution, we will consider the question as to the most advantageous mode of propelling Life-boats by manual labour; for although sails must be employed for the performance of services at very long distances, and in a few localities, where boats are stationed in harbours, steam-vessels may be available to tow them; yet as at nine stations out of every ten Life-boats have to be launched from an open, exposed, and generally flat beach through a heavy surf, and have to proceed entirely through broken water, the manual labour of their crews is the only possible mode of propelling them.

The question has often been asked—why are not Life-boats propelled by steam power? It is a very natural question when we consider the difficulty of rowing any boat against a strong wind, and the much greater difficulty of doing so when, in addition, the opposing force of a heavy breaking sea, such as Life-boats alone could face, has likewise to be encountered. The question is

also now the more frequently asked, since steam-power has been employed usefully in boats of much smaller size than the ordinary coast Life-boats.

It is true that the failures of our present Life-boats to reach wrecked vessels are very few compared with their numberless successes ; but even these few form a sufficient cause for serious consideration of the question, as to the probability or possibility of making steam available for Life-boat propulsion. We propose, therefore, to briefly state the difficulties that have hitherto stood, and still stand, in the way of its application.

If force alone were required there could, indeed, be no hesitation in exclusively adopting it, for so enormous is the power of steam, that the strength of man, or even of the most powerful animals, is insignificant when compared with it. Moreover, if available, steam would possess another and special advantage, in that it would do its work at comparatively small risk of human life ; whereas from ten to twenty men are required to work an ordinary Life-boat, often at the peril of their lives, steam Life-boats would be readily managed by four or five men.

Yet notwithstanding these great advantages, we fear that the difficulties in the way of propelling our coast Life-boats by the aid of steam are insurmountable. The only mode in which it can be made available is through the medium of ordinary steam-tugs, at the very few localities, such as Liverpool and Ramsgate, where there are out-lying banks and sheltered ports, from which Life-boats can be taken in tow at all times of tide, and be placed in any position to windward or leeward of a wreck which may be most convenient and safest for reaching it.

We will at once assume that screw propellers, with the requisite machinery for working them, can be readily fitted to Life-boats, and that by such means a greater

speed might be obtained against a strong wind and a moderate sea ; but the difficulties only then commence.

In the first place, a Life-boat, like the " stormy petrel," which is rarely seen when the heavens are calm and the sea smooth, has its work to do amidst broken seas, and curling surfs where no other boats can live. Except in cases of collision and foundering at sea, when the Life-boat's help can rarely be obtained, vessels are wrecked through running aground, either on outlying banks or rocks, or on the open coast ; in both such cases, in nine instances out of ten, Life-boats have to be launched from an open and exposed beach through a high surf. On such occasions, if the shore be flat, they have to be conveyed through the heavy surfs which frequently in gales of wind form one continuous mass of broken water to the distance of a mile or more from the shore. On their course, heavy seas break over them, often filling them to the level of the thwarts, from three to four tons of water frequently breaking into a Life-boat from a single wave.

It will thus be readily conceived, even by those who have never seen a Life-boat, that there would be extreme difficulty in sufficiently protecting the fires of steam Life-boats from being instantly extinguished ; whilst at the same time preserving the necessary draught of air to enable them to burn, and sufficient access to them by the engineer in charge.

Let us imagine for one moment a steam Life-boat submitted to such a test as beating for three hours over a sand-bank like the Goodwin Sands, with the sea continually breaking over her during the whole time, as will be described in a subsequent chapter. Even if the fires were not put out by the volumes of water breaking into and over the boat, is it likely that the

machinery would bear uninjured such a series of great shocks from contact with the ground, and remain in working order?

The second difficulty arises from the extremely violent motion to which such boats are often subjected, as they are sometimes thrown into almost a vertical position, when bow or stern to the sea, one end being lifted high into the air, and the other buried beneath the water's surface; whilst the lateral motion is even more violent when broadside to the waves, the men on the lee side of the boat sometimes being up to their waists in the water. Many instances have also occurred of Life-boats having been altogether upset under such circumstances.

What would happen to the steam and fires of a steam Life-boat, if upset, although, like the self-righting Life-boats of the NATIONAL LIFE-BOAT INSTITUTION, she might remain only momentarily keel-up, we will not pretend to say, since no steam-boat of any description has ever yet passed through such an ordeal. We believe, however, that there would be the greatest risk of derangement of the machinery, and consequent disabling of a Life-boat, from the mere extent and violence of the motion to which it must frequently be submitted; and it is scarcely necessary to add, that unless such a boat were likewise provided with a full crew and full complement of oars, with room to use them advantageously, her being disabled might, under some circumstances, lead to the destruction of herself and crew.

It has also to be remembered that the average draught of water of all Life-boats, except the heavily water-ballasted boats on a portion of the Norfolk and Suffolk Coasts, is only about nineteen inches; so that the screw-propellers would need to be of very small diameter, and would be frequently above the surface of the water

altogether, and thus work at a great disadvantage when going against a heavy head-surf.

A third, and, as far as we see, insurmountable difficulty, is the fact that the only class of men that are available to work the Life-boats on the coast, viz., the fishermen and other boatmen, would be incompetent to manage a steam-engine, and to keep it in proper order. They are skilful in the use of the sail and the oar, through having them in every-day use in following their avocations; but they know nothing of steam or steam-engines, and as at the majority of stations the Life-boats would not be sufficiently often in use for them to acquire the necessary knowledge by experience, the NATIONAL LIFE-BOAT INSTITUTION would have to seek competent trained men elsewhere. This might appear to persons unacquainted with the system of the Institution a difficulty easily to be overcome; but it is not so, since, apart from the probability that the local boatmen would not, at many places, volunteer to work such boats, it would be necessary to maintain at each place an experienced engineer, and to pay him a sufficient salary for his maintenance; for, unless he were to take the place of the village blacksmith, he would find no other employment in his own line of business.

The question then arises, can manual labour be applied in any more advantageous manner than by the use of oars? In considering this question, we must, at the outset, remember that there are only two principles of propulsion applicable to vessels floating on the water's surface, viz., that obtained by the external pressure on the vessel by the wind, and that effected by a blow or pressure on the water exerted from the vessel itself, as by the paddle, the screw, the turbine wheel, and the oar, unless we include tracking or towing a vessel

through a canal, or along the bank of a river, by men or by horses.

To proceed from the land to sea, we have then only the choice of the two first-named principles. In all the modes of applying the latter of the two, whether by the paddle, screw, turbine wheel, or oar, or by any other that can be devised, the water is used as a fulcrum, and the mechanical law of action and reaction is the source of motion, the reactionary force from the blow or pressure giving, what is in reality a backward motion to the vessel, just as the rebound of a ball from a wall or other plane surface is a backward motion caused by a force imparted to it in an opposite direction.

In exerting that force of any given amount such as the strength of ten powerful men, all we can do is to enable them to apply it in the most efficient manner, and with as small an amount of loss from friction as possible.

Although one of the most ancient, if not the most ancient, instrument of hand propulsion, an oar is still the simplest and the most effectual, and we doubt if it will ever be superseded.

Life-boats have been designed with a cover or roof over them, the boats being propelled by paddles worked by hand-power. Even if it could be shown that such a boat was safer than an open one, we think it very questionable if the men who work them would consent to be shut up under cover, with no opportunity of seeing and judging for themselves of their whereabouts, and of the extent of any danger that they might be called on to encounter. Just as most persons are, naturally, more apprehensive of danger in the dark, when it may be invisible, although close at hand ; so, when their boat was thrown nearly perpendicular by a heavy broken wave

throwing up the bow or stern, or nearly rolled over by a broadside surf, a Life-boat's crew might imagine that the next moment they might be dashed to pieces on a rock, or that they might be hopelessly drifting into a fatal position from which they could never extricate themselves. There would probably also be often great difficulty in getting a wrecked crew safely on board, through a small open hatch in the roof-deck of the boat.

We have dwelt thus far on the peculiarity of roof-covering, since it is a general accompaniment of plans for propelling Life-boats by paddles or screws. Taking all these facts into consideration, we think it will be sufficient to enumerate the special advantages of an oar, to show that any other hand-propeller entering the list to contend with it will meet with a very formidable competitor.

I. "*Oars.*"—The peculiar advantages of oars are as follows: 1st. They are constantly in the hands of our coast boatmen as well as of the crews of ships; and their management is therefore not only thoroughly and practically understood, but every muscle of the body which has to be brought into play is strengthened by its daily use, which advantages are undoubtedly of the very highest importance.

2nd. The friction in working them is very slight when they are properly fitted.

3rd. In the hands of practised rowers they can be accommodated to the motion of the sea, so that they can always be used at full power.

4th. If broken, they can be readily replaced, spare ones being kept on board.

5th. From their oblique stroke, on first immersion, the oars towards the bow and stern can be used with much effect in keeping a boat's head up to the sea, and in

turning her round, when required, in a short space. This also is a most important advantage.

On the other hand, their disadvantages are :—

1st. That the force which has to be used to make the back stroke, and place the oar again in position, is a direct loss, allied with which is the loss of momentum consequent on the motion being backwards and forwards instead of being continuous.

2nd. When out of the water they must hold more or less wind, which is a disadvantage when rowing against a fresh gale.

II. "*Rotary Propellers.*"—Their chief if not only advantage would be, that the motion being continuous the whole of the force exerted is in one direction, round an axis, and that by the aid of a weighted or fly-wheel they may be made to retain their momentum, which would assist to carry them over any momentary extra resistance : as, for instance, that of the blow of a heavy sea, and over those parts of their circuit when the men working them could not employ their strength to advantage. Their disadvantages are : 1st. That the men who would be alone available to manage them would be unaccustomed to the work of turning the handle of a winch, and would not use their strength so advantageously as in rowing with an oar ; whilst, if they exerted themselves continuously, round the whole circle, the labour would be very exhausting, and they would soon succumb from fatigue, especially as they would be working in a confined atmosphere and in a covered boat.

2nd. They would be powerless to keep a boat's head up to the sea when both wind and sea were very high, and on one bow.

3rd. The friction in working them would probably be greater than that of an oar.

4th. If the shaft of the screw or any other part of the machinery should get broken or out of order the boat would lie at the mercy of the wind and waves.

5th. In the case of paddles they would work at great disadvantage, consequent on the violent motion of the boat from side to side ; since the paddle on one side would often be spinning round in the air, whilst the other would be too deeply immersed. A screw would likewise be frequently out of the water, from the pitching or longitudinal motion of the boat.

As these several propositions are almost self-evident, it is unnecessary to dwell on them at further length.



CHAPTER XIII.

QUALITIES REQUIRED IN OARS FOR LIFE-BOATS—LIGHTNESS, STIFFNESS, STRENGTH, LENGTH—HEIGHT OF ROWLOCKS—DRAWINGS AND DESCRIPTION OF SWIVEL ROWING CRUTCHES USED IN THE LIFE-BOATS OF THE INSTITUTION—SQUARE LOOMED OARS.

AS a Life-boat has, in the majority of cases, to be propelled by oars, and as, in order to rescue a shipwrecked crew, she has generally to be rowed to windward against a heavy sea and strong wind, it follows that too much care cannot be taken to place in the hands of her crew the most efficient instrument for the performance of their laborious and perilous work.

There are three valuable properties to be considered in oars for Life-boats, viz., lightness, stiffness, and strength; and if all three were of equal value there would be no difficulty in arriving at a decisive conclusion as to the fittest description of wood for a Life-boat's oars, after testing a sufficient number of each sort. The question is not, however, quite so simple, and must after all remain a matter of opinion to some extent, as the above-named properties have different values, and even all practical rowers may not agree as to the relative value of each. We will remark on the three above-stated properties in succession.

1. *Lightness.*—It is of the utmost importance that a Life-boat's oar should be as light as possible, consistent

with strength ; for, however well-balanced an oar may be, a greater effort must be required to move a heavy than a light one, and, in proportion, the sooner will a person become fatigued in rowing with the one than with the other ; and, as a Life-boat man will frequently have to make many hundred, and sometimes several thousand strokes with his oar before he gains his object, three or four pounds extra weight, like the last pound on the camel's back, may cause him to break down altogether. Since, therefore, an oar being heavy or light may make the difference of a rower retaining his strength of arm or not, and of reaching a wrecked vessel or not, too much attention cannot be paid to secure the greatest possible lightness, in conjunction with adequate strength.

As the only suitable woods for the making of oars are different species of fir and ash, and as all fir woods are lighter than ash, it follows that, in this respect, fir oars are to be preferred for Life-boat service.

2. *Stiffness*.—A stiff oar is considered to be more manageable in a rough sea than a pliant one, although in smooth water many men prefer rowing with pliant oars, especially those who have been accustomed to their use.

It is commonly supposed that there is a loss of power in rowing with a pliant oar, a certain portion of the force applied being expended in bending the oar. Such, however, is only to a slight extent the case, as no force once exerted can be absolutely lost ; and the oar itself, in its effort to recover its normal condition of straightness before being withdrawn from the water, will continue the force first imparted to it after it has ceased to be made, in the same manner that a spring-board, in recovering its straight direction, enables a person to jump to a higher altitude or farther distance than he otherwise

could ; the oar, in fact, merely acting as a medium for applying the force in an unequal and more prolonged manner. A slight degree of pliancy in an oar is probably, therefore, not a disadvantage, although much pliancy would be.

3. *Strength*.—It will no doubt be supposed by most persons that an oar cannot be too strong, and that, therefore, great strength is the most important element in a Life-boat's oar. Up to a certain amount of strength, such is the case, and every oar in a Life-boat should be so strong that the most powerful man could not break it in rowing ; but beyond that amount, independently of unnecessary strength involving greater weight, it becomes a question whether additional strength may not be a positive, and possibly a serious, disadvantage, even to the extent of endangering the safety of a boat.

The most frequent cause of the breaking of oars in a Life-boat is her being struck by a broadside surf, when the lee gunwale being forced under water, the men on that side cannot raise the blades of their oars sufficiently high to prevent their becoming immersed : in that case the pressure of the water on the blades, as the boat is being carried, broadside on, at the rate of several miles an hour, before the sea, is so great that the oars are forced from the rowers' hands, and retained in a nearly upright position, with the blades several feet below the bottom of the boat. If the boat be in shallow water, they then come in contact with the ground, and are instantly broken, whilst, if in deeper water, they also often break ; and if from their great strength they were not to break, the strain on them is then often so great that they would wrench the thole-pins out of their sockets, and break the gunwale of the boat ; or, if the latter were too strong to give way, the risk of the boat upsetting would

be much increased, as the pressure of the still water on the blades of the oars beneath the boat, and that of the crest of the sea on her upper side in the opposite direction, would powerfully tend to upset the boat.

In selecting the most suitable description of oar for a Life-boat, we have then to decide on a maximum of desirable strength, and on a limited flexibility or pliancy, and to select the lightest description of wood that possesses those properties.

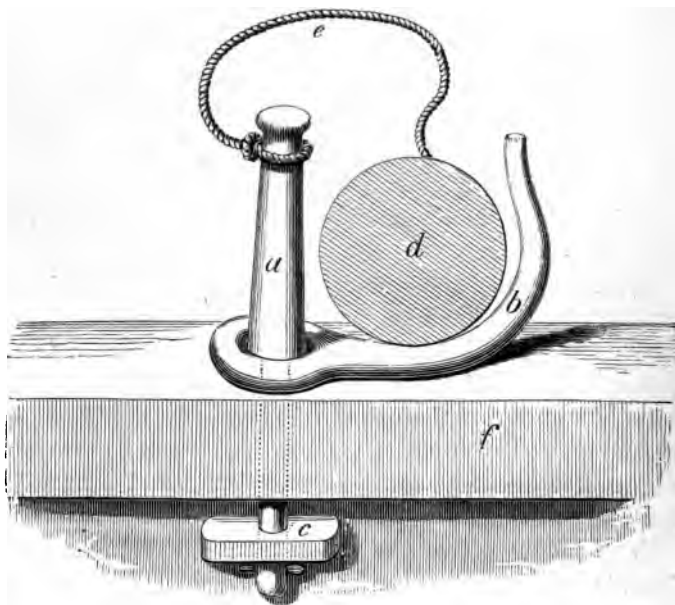
An oar is a simple lever, of what is termed the second order, that is, wherein the weight or body to be moved lies between the fulcrum and the motive power; the water being the fulcrum of the lever, the gunwale of the boat the point at which its power is applied to the moving body or weight, and the rowers' arms being the source of power.

The length of an oar must of course be proportional to the width of the boat, and it should be so poised on the gunwale that the rower can raise or depress it or move it in any direction with the smallest effort. An oar should be not less than five inches wide in the blade, or it will expose so small a surface to the water as to cut through it, and so work on a too yielding fulcrum, with comparative loss of power.

The height above the thwarts, of the thole or rowlock in which the oar works on the gunwale, should be sufficient to enable the rower to lift the blade well above the waves by depressing the loom or handle; but, on the other hand, it must not be so high as to require him to raise his arms above the level of his chest in rowing, in which case he will row with much less force, and be much sooner fatigued. A height of eight inches from the thwarts to the oar on the gunwale will be found a suitable average.

Lastly, the mode of confining the oar to the gunwale of the boat is of much consequence. The most common modes, in ordinary boats, are rowlocks and double pins, between which the oar works ; but as an oar is liable to jamb in the rowlock when rowing in a rough sea, and thereby to get broken, or to damage the gunwale, the

Fig. 1.

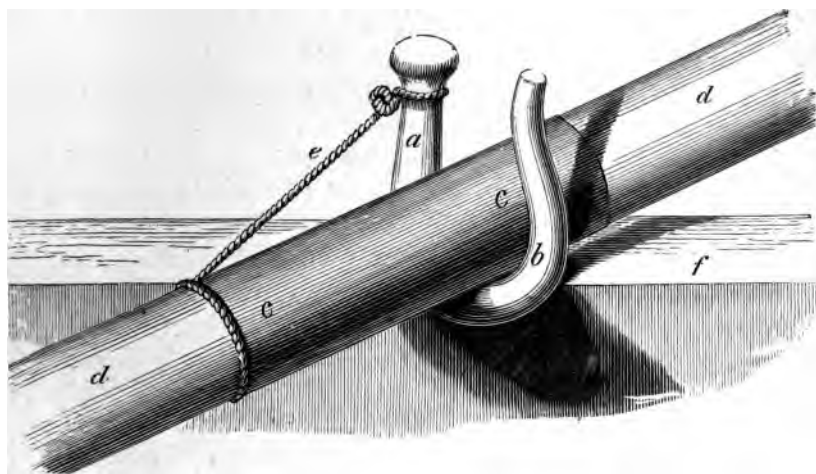


oars of Life-boats have generally been worked in a rope grummet or ring, over a single iron thole-pin : a further advantage of this plan is that it enables the oars to lie along the outside of the boat when not in use, and thus saves the necessity of unshipping them and getting them in-board on going alongside a wreck, which is a great advantage.

A description of swivel-crutch, intended as a substitute for a grummet, was planned for the National Institution's Life-boats, by its Inspector, which is found to have the advantages of the grummet, and to be more convenient in some respects. We subjoin a sketch of it.

Fig. 1 represents the inside of a boat's gunwale, with a section of the oar within the crutch, the latter supported on the gunwale in the position in which it remains whilst

Fig. 2.



the oar is in use. *a*, is an ordinary iron thole-pin ; *b*, the crutch, also of galvanised iron, which revolves round the thole as an axis ; *c*, a clamp or chock, which receives the lower end of the thole ; *d*, a section of the oar ; *e*, a short lanyard with a running eye, which is slipped over the head of the thole whenever the oar is required to hang over the side ; *f*, the gunwale.

Fig. 2 shows the oar when let go by the rower and allowed to hang alongside outside the gunwale. *a*, the

thole; *b*, the crutch; *c*, the leathering on the oar, to prevent chafe; *d*, the oar, as hung alongside; *e*, the laniard spliced round the oar, below the leathering, and nailed on to prevent its slipping round or along the oar; *f*, the gunwale.

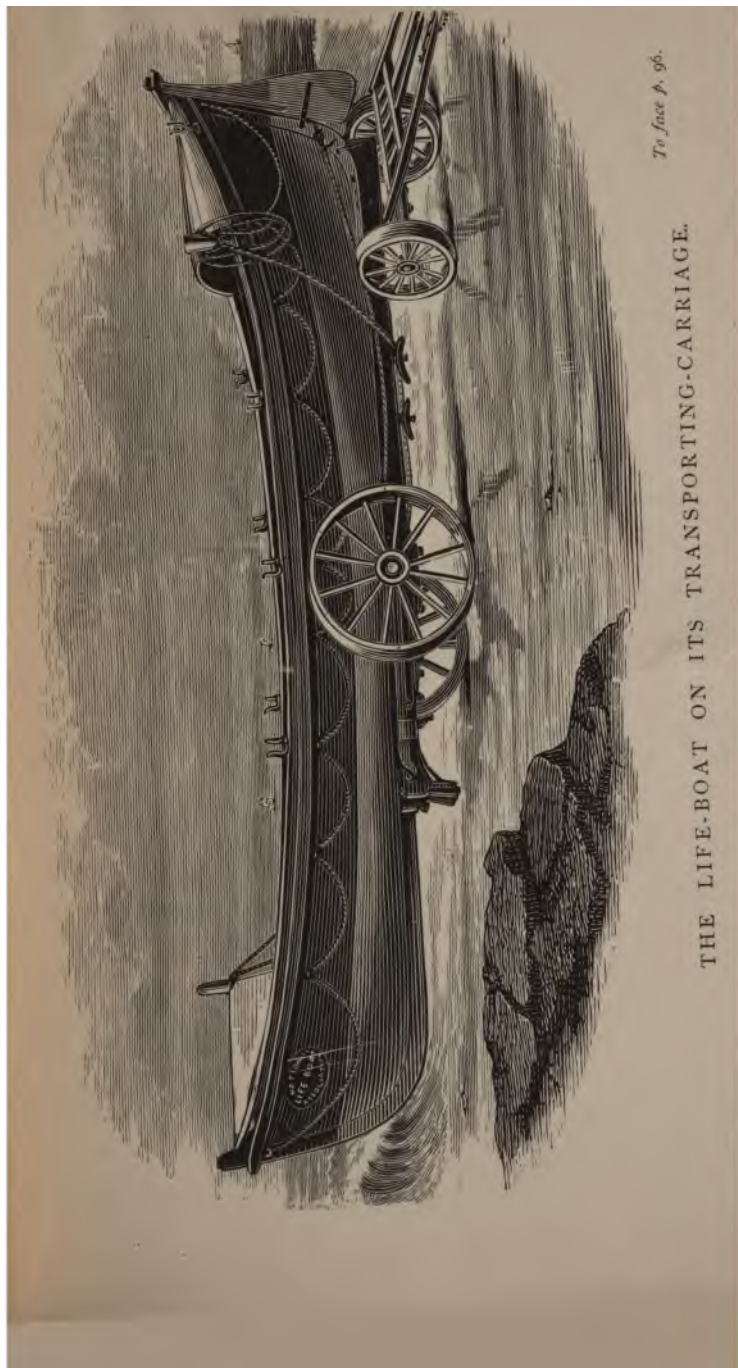
The principle advantage of the swivel-crutches over grummets is, that they are of a more durable character, are fixtures, and not so liable to be mislaid or lost, and retain always the same size and shape, whereas a grummet is liable to stretch by use, when the oar will work too loosely in it.

The oars supplied in general to the Life-boats of the Institution are made round loomed, except a few boats on the Scotch coast and on the north-east coast of England. They are supplied with the square loomed or coble oar, which consists of two separate parts, the loom of the oar being a square or flat-sided piece, and the blade, with a short portion of the loom, is usually joined to the other by two iron slides, which secure and hold the two parts firmly together; the flat part of the loom rests on the gunwale of the boat, and in that position will not admit of being "feathered" similarly to an oar with a round loom. An iron ring is firmly attached to the oar at its proper equipoise which fits over a single iron pin or thole; so that there is no danger of the oar going adrift, although left suspended over the side of the boat; and they may also be turned either towards the stem or stern of the boat without being unshipped.

CHAPTER XIV.

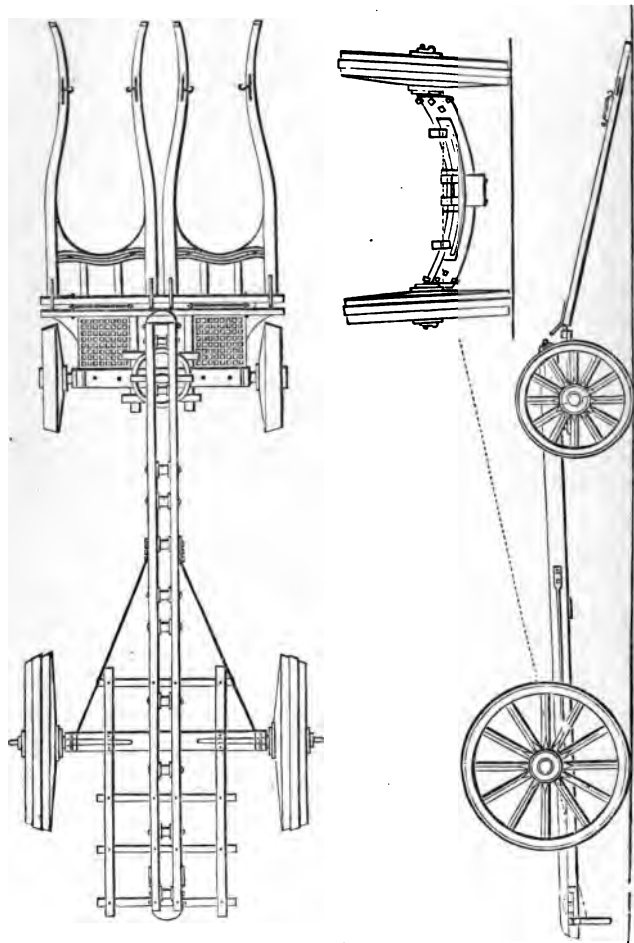
LIFE-BOAT TRANSPORTING AND LAUNCHING CARRIAGE — MODE OF LAUNCHING A LIFE-BOAT FROM ITS CARRIAGE—HAULING OFF WARPS AND ANCHORS—LAUNCHING “SETS”—DRAWINGS AND DESCRIPTION OF THE CARRIAGE—SPECIFICATION OF MATERIAL AND DIMENSIONS OF SAME—DRAWINGS AND DESCRIPTION OF ROLLER SKID AND TURNABLE—DRAWINGS OF IMPROVED ROLLER FOR CARRIAGES AND SKIDS.

A MOST important adjunct to the Life-boat is a *Carriage*. It is not sufficient that the boat herself be of a superior description, capable of contending safely and successfully with that element in which her work has to be performed, that she shall be able to reach the shipwrecked crew despite the fury of the wind and waves, and bear them securely through the dreaded breakers, which often oppose an insurmountable barrier between them and the envied shore. It is not sufficient that she be well furnished in all respects, and manned by an experienced and courageous crew; but it is necessary that she be also supplied with means for transportation on the land, for wrecks may occur at a distance of several miles from the spot where she is stationary, yet close to the shore. In such cases it is usually much safer and more expeditious for the Life-boat to be conveyed by land to that part of the shore contiguous to the wreck, than for her to be rowed or sailed, broadside to the sea, through, perhaps, several



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THE LIFE-BOAT ON ITS TRANSPORTING-CARRIAGE.



THE LIFE-BOAT TRANSPORTING CARRIAGE.

supplied to each boat a skid (fig. 2) capable of revolving on a pivot, fixed in a lower platform. These turn-table skids are used for turning the boat in any direction, or completely round.

Recently an improvement has been effected in the

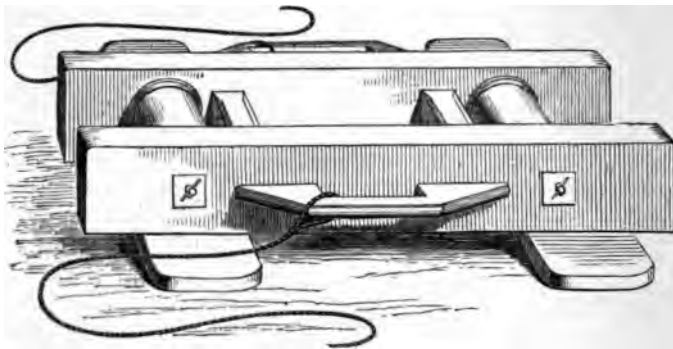


Fig. 1.

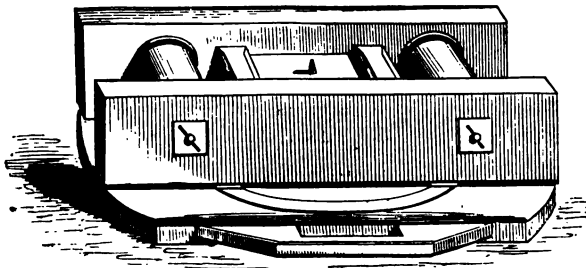


Fig. 2.

formation of the roller, and the newly-designed one is found from its great simplicity, and the ease with which it can be removed for examination and lubrication, to be very suitable to Life-boat work. The following rations will serve to show the character of this roller.

Fig. 3 represents the roller, which is cast solid, with two projecting axle-arms, on which it revolves.

Fig. 4 shows a portion of the inner face of one of the wooden side-pieces forming the frame of a portable skid, or of the keelway of a carriage. In this frame, on

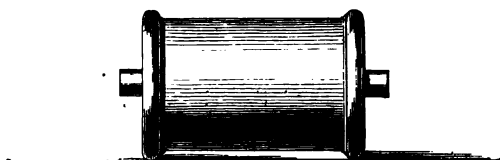


Fig. 3.

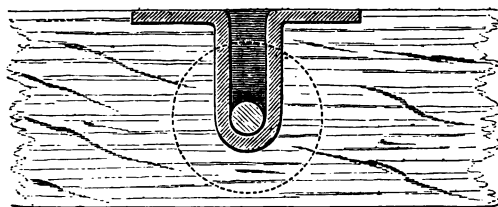


Fig. 4.

either side, is sunk a groove, or slot, which when lined with a letter U-shaped iron lining of sufficient strength, corresponds in width and depth with the diameter and length of the axle-arms on the roller, the bottom of the groove acting as a bed or matrix in which the corresponding axle-arm revolves.

miles of broken water. Again, at many places the shore is very flat; and should a wreck occur at low water, although abreast of the Life-boat Station, she might have to be conveyed a quarter of a mile or more over the ground before she could be floated, which could then only be accomplished at the expense of much labour and loss of valuable time, unless she were placed on a wheeled carriage.

At an early period the attention of the Institution was turned to the improvement of its Life-boat Carriages, and no pains or expense were spared to make them as efficient as possible, not only for transport but as a means of launching a Life-boat safely, quickly, and effectually. The subject was warmly taken up by the late Colonel J. NISBETT COLQUHOUN, R.A., F.R.S., Director of the Carriage Department at the Royal Arsenal, Woolwich, justly celebrated as one of the most able officers of his day, whom the Editor is proud to remember as one of his earliest and most attached friends.

Colonel COLQUHOUN became Chairman of the Institution's Carriage, House, and Rocket Sub-Committee; and in 1852 he caused to be built in the Royal Arsenal, from his own designs, a Carriage which was supplied to four stations, and then abandoned by the Committee, as a permanent pattern, on account of its costliness and weight. It however became the acknowledged pattern, of which all subsequent ones were more or less modifications.

On the decease of Colonel COLQUHOUN, his successor at the Royal Arsenal, Lieut.-Colonel A. T. TULLOH, R.A., also turned his attention to the subject, and, with his assistance, and that of Messrs. RANSOME & SIMS, of Ipswich, a Carriage on a modified plan was produced.

It was much cheaper and lighter, but after some extensive trials of four Carriages of that class on the coast, it was also found that it was not sufficiently simple in its arrangements for the crews of Life-boats to handle it successfully.

The Committee then requested their Inspector of Life-boats to carry out a series of investigations, round the entire coast, and draw up a Report to them embodying the results of the observations of different persons experienced in the use of the various kinds of Life-boat Transporting Carriages then in use, together with his own opinion of the best way of meeting the necessities of the case.

As the result of those investigations, Captain WARD placed before the Committee designs for a carriage, which he considered would meet the various conditions required in a Life-boat Carriage, as far as was practicable. His plan was approved by the Committee; and the carriage then built became the model on which the Institution has continued to build to the present time.

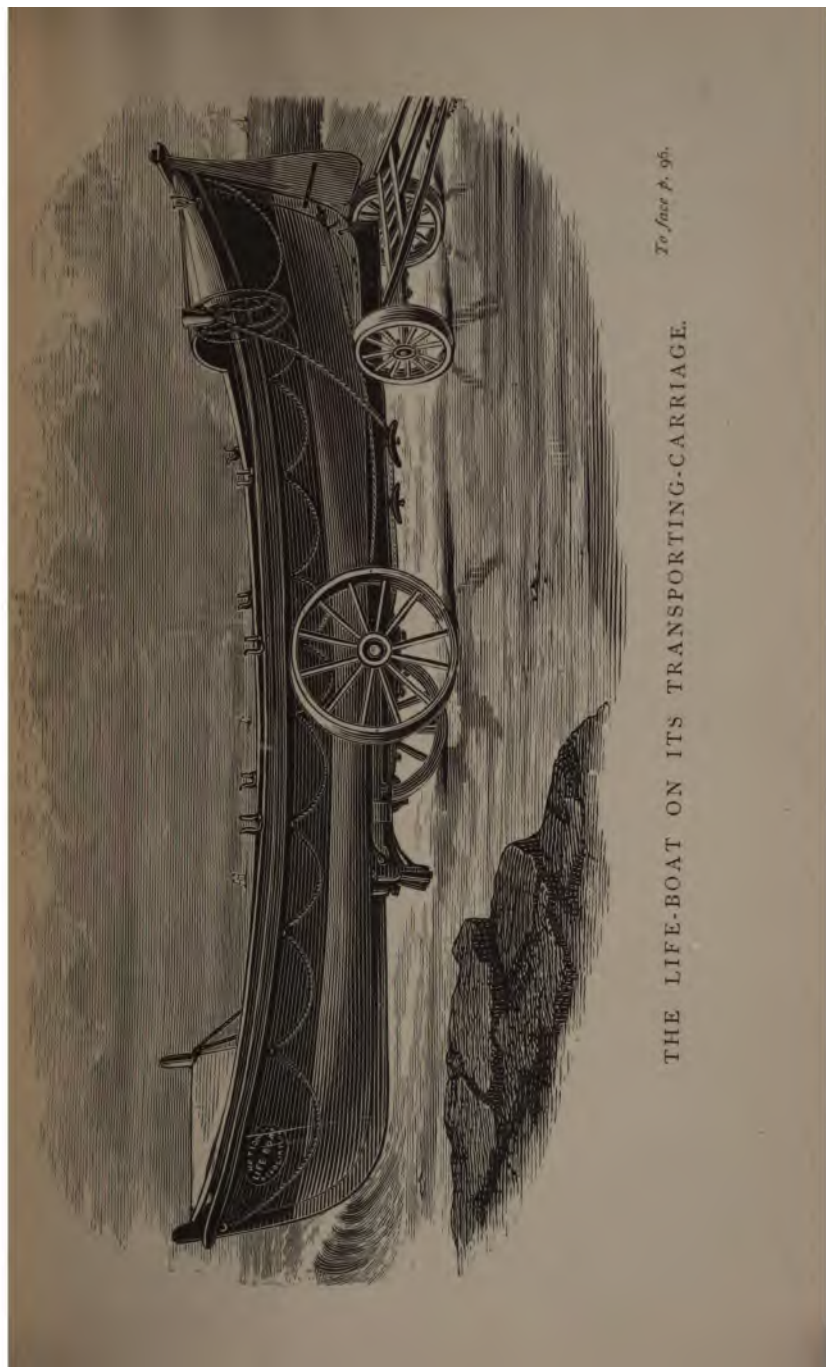
Accordingly we find that each of the Institution's Life-boats, except a few of the larger size, is provided with a Carriage, on which she is kept in the Boat House ready for immediate transportation to the most favourable position for launching to a wreck. Thus the Life-boat is made available for a greater extent of coast than she otherwise would be, and even when launched from abreast of the Boat House can be much more quickly conveyed to the water's edge than she could be if not on a carriage. In addition to this ordinary use, a Carriage is of immense service in launching a boat from a beach without her keel touching the ground; so much so, indeed, that one can be readily launched from a Carriage through a high surf, when without one she could not

be got off the beach. An explanation of the manner in which this service is performed will be readily understood.

The Life-boat is drawn to the water's edge, where the Carriage is turned round, so that its rear end, from which the boat is launched, shall face to seaward. The crew then take their seats in the boat, each rower in his place, with his oar over the side ready to pull, and the coxswain at the helm, or with steering-oar in hand. The Carriage is then backed by men or horses or both sufficiently far into the water to ensure the boat being afloat when she is run off the carriage, or if the ground be very soft, or sufficient help unattainable, the Carriage is first backed into the water before the crew get into the boat. Self-detaching ropes, termed launching ropes, previously hooked to each side of the boat's sternpost, and rove through sheaves at the rear end of the carriage, are then led up the beach, and manned either by assistants, or have one or more horses attached to them.

When all is ready, the coxswain, watching a favourable moment, gives the word, and the boat, the keel of which rests on small iron rollers, is run off rapidly into the water, with her bow facing the surf. The oarsmen then give way, even before her stern has left the carriage, and she is at once under command, ere the sea has time to throw her back broadside to the shore, which is usually the effect of attempting to launch through a surf from an open beach without a Carriage, unless a hauling-off warp attached to an anchor be permanently laid down outside the surf. This latter plan is only available in a few localities where there is a comparatively steep beach.

At most of such localities, however, a larger class of Life-boat is stationed, which boats are unprovided with carriages, and at which places permanent warps, either



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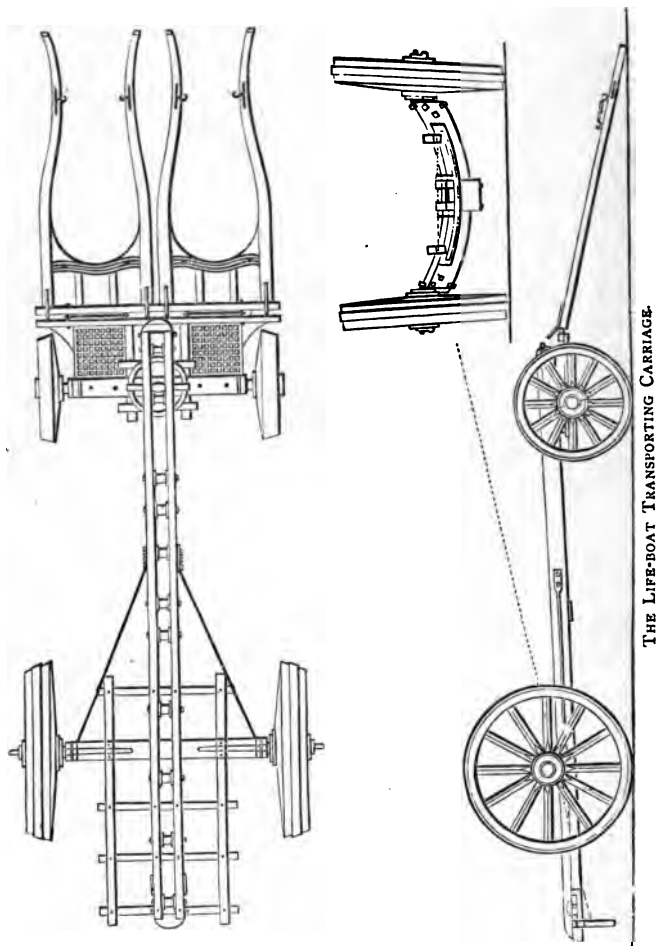
THE LIFE-BOAT ON ITS TRANSPORTING-CARRIAGE.

double or single, are provided, the former being rove through a block attached to a buoy, moored at a sufficient distance from the shore, and the latter attached to an anchor. These warps are kept out through the winter months, and taken in during the summer.

Another mode of giving a boat this first necessary impetus is by means of either one or two long poles, called "sets," from 35 to 50 ft. long, with an iron fork at one end, which being placed against the sternpost of the boat or near it, and pushed by persons on the shore, are often very effective.

By one or other of these methods the Life-boats of the NATIONAL LIFE-BOAT INSTITUTION have been safely and effectually launched during the twenty-two years of their existence ; whilst the occasions of their failure have been so rare as hardly to be worth consideration.

The annexed is a drawing of the Life-boat Transporting Carriage of the Institution. It consists of a fore and main body ; the latter is formed of a keelway, and of side or bilgeways attached to the keelway, and resting on the main axle, the boat's weight being entirely on the rollers of the keelway. Its leading characteristic is that on the withdrawal of a forelock pin, the fore and main bodies can be detached from each other. The advantages of this arrangement are that the weight of the boat when she is launched from the rear end forms an inclined plane, by elevating the keelway and fore-carriage. To replace her on the carriage she can be hauled bow foremost up the fore end or longer incline, by disconnecting the fore-carriage, and letting the end of the keelway rest on the ground, thus forming an inclined plane up which the boat is easily drawn. The bilgeways are needed at the rear end, that the boat may be launched in an upright position, with her crew on board, but they are not required at the fore end of the carriage.



SPECIFICATION OF MATERIAL, AND DIMENSIONS, OF A
TRANSPORTING CARRIAGE FOR THE 33-FEET LIFE-
BOAT.

HIND CARRIAGE.—Bed of oak, 8 in. wide, $7\frac{1}{2}$ in. deep, and plated with iron $\frac{3}{8}$ in. thick by 6 in. wide on each side, and $\frac{1}{2}$ in. by 6 in. wide on top. Keelways of oak, 22 ft. 6 in. long, 3 in. wide, $8\frac{1}{2}$ in. deep, and plated outside with iron $\frac{3}{8}$ in. thick by 6 in. wide, and fitted with 11 improved drop rollers. Cross-pieces of ash, $3\frac{1}{2}$ in. wide, 3 in. deep, made circular, as per sketch, and plated with half-round iron, $1\frac{3}{8}$ in. wide by $\frac{1}{2}$ in. thick, or of angle irons of the same form. Bilge bearing pieces of oak, 10 ft. long, 3 in. wide, $4\frac{1}{2}$ in. deep. Wheels, 7 ft. high; felloes of elm, 9 in. wide, 4 in. deep; spokes of oak, 2 in. on the face, $4\frac{1}{2}$ in. wide; stock of elm, 1 ft. 2 in. long, 1 ft. 5 in. diameter; tires—centre, $\frac{5}{8}$ in. by 4 in.; front, $\frac{3}{8}$ in. by 2 in.; and hind, $\frac{3}{8}$ in. by $2\frac{1}{2}$ in. wide.

FORE CARRIAGE.—Splinter bar of ash, 7 ft. 2 in. long, $3\frac{1}{2}$ in. wide, 3 in. deep. Bed of English oak, 6 in. wide, 7 in. deep. Futchells of ash, 3 in. wide, 3 in. deep. Shafts of ash, $3\frac{1}{2}$ in. wide at the bar, 3 in. deep, plated with iron, No. 10 guage, by 2 in. deep. Bars of ash, front, 3 in. deep, $2\frac{3}{4}$ in. wide; hind, 3 in. deep, $2\frac{1}{2}$ in. wide. Wheels, 4 ft. 2 in. high: stock of elm, $12\frac{1}{2}$ in. long, 12 in. diameter; spokes of oak, $2\frac{1}{2}$ in. on the face, $3\frac{1}{2}$ in. wide; felloes of elm, 9 in. wide, $3\frac{3}{4}$ in. deep; tires—centre, $\frac{5}{8}$ in. thick, 3 in. wide; front, $\frac{3}{8}$ in. thick, $2\frac{1}{2}$ in. wide; hind, $\frac{3}{8}$ in. thick, 3 in. wide.*

As the hauling up of a heavy boat is a laborious work, portable Roller Skids are supplied to the stations of the NATIONAL LIFE-BOAT INSTITUTION, and are found valuable auxiliaries in hauling up its boats, saving much labour, trouble, and expense. Indeed on account of the great weight of Life-boats, varying as they do from 2 to $4\frac{1}{2}$ tons, it would be impossible to haul them over the ground, or on to their Carriages, without some such contrivances, whilst the process of rapidly launching them from their Carriages into the water also much depends on whether the rollers on which they run turn freely and readily.

Fig. I is a sketch of the Roller Skid. There is also

* Messrs. ROBINSON & NAPTON, of Limehouse, London, are the present builders of the Institution's Transporting Life-boat Carriages.

supplied to each boat a skid (fig. 2) capable of revolving on a pivot, fixed in a lower platform. These turn-table skids are used for turning the boat in any direction, or completely round.

Recently an improvement has been effected in the

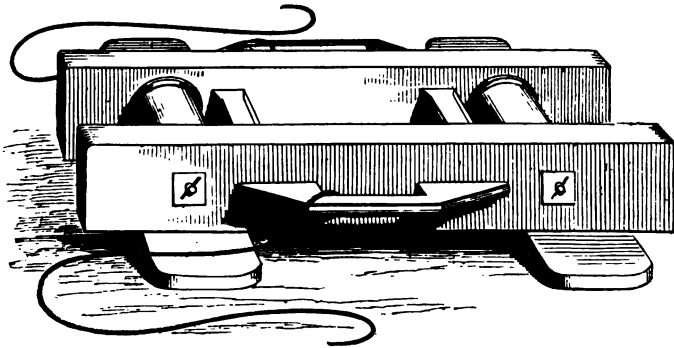


Fig. 1.

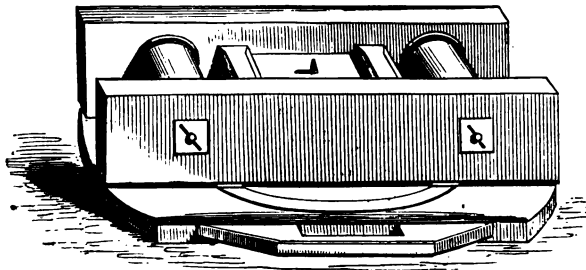


Fig. 2.

formation of the roller, and the newly-designed one is found from its great simplicity, and the ease with which it can be removed for examination and lubrication, to be very suitable to Life-boat work. The following illustrations will serve to show the character of this roller.

Fig. 3 represents the roller, which is cast solid, with two projecting axle-arms, on which it revolves.

Fig. 4 shows a portion of the inner face of one of the wooden side-pieces forming the frame of a portable skid, or of the keelway of a carriage. In this frame, on



Fig. 3.

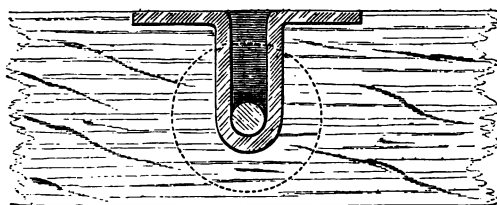


Fig. 4.

either side, is sunk a groove, or slot, which when lined with a letter U-shaped iron lining of sufficient strength, corresponds in width and depth with the diameter and length of the axle-arms on the roller, the bottom of the groove acting as a bed or matrix in which the corresponding axle-arm revolves.

CHAPTER XV.

THE CORK LIFE-BELT USED BY LIFE-BOAT MEN—DRAWING AND DESCRIPTION OF SAME—REQUISITE QUALITIES IN SUCH A LIFE-BELT—FLUID COMPASS USED IN LIFE-BOATS—THE REST OF THE EQUIPMENT OF STORES FOR LIFE-BOATS—THE LIFE-BOAT HOUSE—EXPENSE OF A LIFE-BOAT ESTABLISHMENT.

THERE is another article which is of the utmost importance to the efficient and safe manning of the Life-boat, and that is the Life-belt. Each coxswain is held responsible that every man who goes into his Life-boat, whether on service or exercise, shall have on a Life-belt.

One of the causes of the great loss of life which attended most Life-boat accidents in former times, independently of the boats not possessing the self-righting property, was undoubtedly that their crews were not provided with efficient life-belts.

The cases of accident already referred to under the head of *Self-righting*, are equally illustrative of the value of good life-belts, for in each case the men were supported by their belts, which were of the greatest service to them. For it must be remembered that the majority of our coast boatmen cannot swim, and that even the best swimmers often forfeit their lives, when upset in heavy surfs, through losing their presence of mind. Many cases could be

quoted, but none more conclusive than that of the Southwold boat before referred to, when three gentlemen without belts were drowned, although one of them was known to be a good swimmer; whilst fifteen men who had on belts, several of whom not being able to swim, were all saved.



Captain WARD, in 1854 designed the Cork Life-belt, which has been since that period adopted by the Institution and many Foreign Life-boat Societies. He observes that the requisite qualities of a Life-boatman's Life-belt should be—

1. Sufficient extra buoyancy to support a man heavily

clothed, with his head and shoulders above the water, or to enable him to support another person besides himself.

2. Perfect flexibility, so as to readily conform to the shape of the wearer.

3. A division into two zones, an upper and lower, so that between the two it may be secured tightly round the waist; for in no other manner can it be confined sufficiently close and secure round the body without such pressure over the chest and ribs as to materially affect the free action of the lungs, impede the muscular movement of the chest and arms, and thereby diminish the power of endurance of fatigue, which, in rowing-boats, is a matter of vital importance.

4. Strength, durability, and non-liability to injury.

The Cork Life-belts of the NATIONAL LIFE-BOAT INSTITUTION possess the first two qualities in a greater degree than any other Life-belt, and the third one exclusively. As shown in the annexed illustration, they are tied round the waist by strings and secured by other strings, passing like braces over the shoulders. It is of great importance that the Life-boat man should tie his Life-belt securely round him, since its efficiency, and as a consequence his own life, may depend on its being so.

To ensure this object it is indispensable—

1st. That the upper back strings of the belts should be drawn tightly over the shoulders, after being crossed behind, and be tied carefully and tightly to the front strings on the chest, so as to make it impossible for the belt to drop down over the hips, where it would rather help to drown the wearer than be the means of saving him.

2nd. That the waist strings should be drawn tightly round the body, between the two rows of cork, and then

tightly and carefully tied in front ; since, unless so tied, the sea, getting under it, may have sufficient force to break the strings, and as when kept closely in contact with the person of the wearer, the warmth of his body will be much longer retained, cork being a bad conductor of heat.

The coxswains of the Life-boats are therefore instructed to be most careful in seeing that the life-belts under their care are always in good condition, that their strings especially are strong, and on every occasion of going afloat in the Life-boat, that each of her crew has his belt properly and securely tied before getting into the boat.

The extra buoyancy of this belt is equal to about 25 lbs. It will support an ordinary man with his clothes on, with the shoulders and chest above the water. The most buoyant of the old descriptions of cork belt (CARTE'S) had extra buoyancy equivalent to about 14 lbs., and some not more than 7 or 8 lbs. The largest size of the ordinary inflated belts has buoyancy equal to 20 lbs. when completely inflated ; some not more than 8 or 10 lbs.

The defects of all inflated air-belts are, their liability to puncture, want of strength, want of flexibility if more than half inflated, difficulty of inflation in very cold weather, and the liability of their inflating-valves to get out of order by corrosion from the effects of salt-water.

Another important feature in the equipment of those Life-boats which may be called on at night to proceed to long distances from the shore is the Compass. The subject of the Mariner's Compass has for many years past been considered a most important one, and has had great attention bestowed on it, especially since the introduction of iron as a material for building ships.

The principles of construction of Compasses for boats are the same as of those for ships ; but, on account of the more violent motion of a boat in a rough sea, it is necessary to provide some mode of steadying the face-card to which the needle is attached, in addition to the ordinary "gimbals" on which Ships' Compasses are balanced. For such compasses in boats and small vessels, subjected to the motion of a rough sea, are so perpetually in motion, spinning round and round, as to be then altogether useless. It is evident, therefore, that they are not appropriate to Life-boats, whose work always lies amongst heavy seas.

To remedy this evil, the late Mr. F. DENT, the chronometer-maker, Strand, London, devised the particular description of Compass known as "Dent's Fluid Compass," the improvement consisting in the card and needle being immersed in a fluid enclosed in a hermetically-closed bowl. This plan was found to answer the purpose admirably, and these compasses are now in general use in the Royal Navy, and to some extent in the mercantile marine.

The annexed diagram and explanation will make sufficiently clear to the general reader the character of a Fluid Compass as manufactured by Messrs. E. DENT & CO., the successors to Mr. F. DENT.

An admirable modification of DENT'S Fluid Compass and Binnacle was especially designed for and under the superintendence of the ROYAL NATIONAL LIFE-BOAT INSTITUTION.

This Compass and Binnacle is shown in the accompanying illustration, which will speak for itself almost without description.

The only modification in the Compass is the reduction of the size of the card, which is only three inches in

Fig. 1.

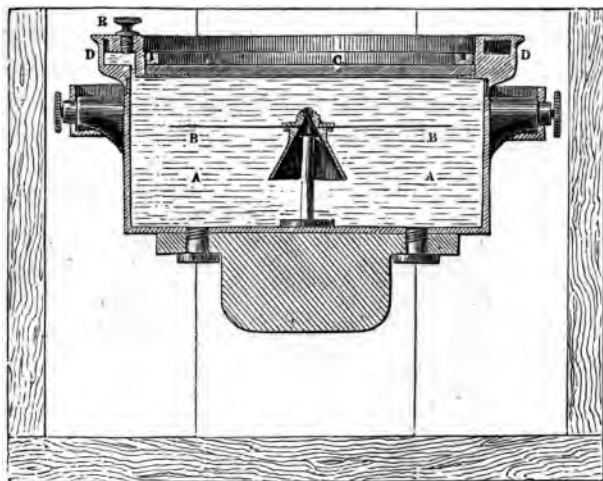


Fig. 2.

Figures 1 and 2 are vertical sections; Fig. 1 of the Fountain Reservoir, and Fig. 2 of the Bowl when filled. The same letters refer to similar parts in each figure. A is the bowl filled with dilute alcohol, or other suitable liquid; B is the card with the magnetic needle attached to it, and turning on a central point or pivot; C is the glass top of the bowl; D is the annular fountain reservoir. This reservoir has a nozzle or filling hole, closed by a screw, R, below which, at E, is a hole, forming a communication with the bowl, A.

To fill the bowl, the screw R is taken out, and a small funnel inserted, through which the liquid is poured in (the air passing out at the same time by the side of the funnel), until the bowl A is full. The liquid is still poured in until it nearly fills the reservoir D; the screw R is then screwed in, and the whole is thus tightly closed up. The elasticity of the air remaining in the reservoir allows for the contraction and expansion of the liquid; and if any liquid escapes by evaporation from the screws not being absolutely air-tight, its place is supplied by liquid from the fountain reservoir D.

If by any chance a bubble of air should find admission to the bowl A, it passes up into the reservoir D, either spontaneously or by slightly inclining the bowl to allow of its escape, which it does instantly. The fluid is composed of one-third spirits of wine and two-thirds pure water. In high latitudes more spirits may be used if there is any danger of its freezing.

diameter. The binnacle is made of copper, japanned ; it is scarcely more than six inches square and eight inches high, yet works on double gimbals ; it is only $5\frac{3}{4}$ lbs. in weight yet is provided with a lamp and reflector, and with a drawer to contain spare wicks and matches, being therefore so portable as to be readily held in the hand. It has been found, in the Life-boats of the Institution, to answer admirably in every respect.



DENT'S FLUID LIFE-BOAT COMPASS.

The remainder of the equipment of a Life-boat is detailed in the accompanying list :—

LIST OF THE EQUIPMENT OF STORES SUPPLIED TO AND USED IN FITTING UP THE 33 FEET LIFE-BOAT OF THE INSTITUTION.

1. Oars—one set and a half, and 2 Sweeps.
2. Two Boat-hooks.
3. Two Masts and Yards.
4. One set, and a half set of Iron Swivel Crutches and Steering Crutches.
5. Two Valve-wrenches.
6. Cable, 60 fathoms ($3\frac{1}{2}$ -inch Manilla).
7. Haul-up Hook with Rope, 20 fathoms (3-inch ditto).
8. Rope for Tail-block, Tackle-blocks, and Securing-pennants, 10 fathoms (3-inch Hemp).
9. Inside Life-lines, Rudder-gear, &c., 25 fathoms ($1\frac{1}{2}$ -inch Manilla).
10. Two small Veering-lines, 30 fathoms each ($1\frac{1}{2}$ -inch ditto).
11. Cork Float-lines, 20 fathoms ($1\frac{1}{2}$ -inch ditto).
12. Bow-securing Rope, 5 fathoms (3-inch ditto).
13. Two Tackles, 20 fathoms each ($2\frac{1}{2}$ -inch ditto).
14. Slings, to be converted into two Drag-ropes, 30 fathoms ($3\frac{1}{2}$ -inch ditto).
15. Ties and Shrouds, 12 fathoms (2-inch ditto).
16. Halliards and Sheets, 45 fathoms ($1\frac{1}{2}$ -inch ditto).
17. Lead-line ($\frac{1}{2}$ log line).
18. Oar-lanyards, &c., Hamboro' line, 9-thread and 6-thread, 1 skein of each.
19. House-line, 2 skeins; Twine, 1 Skein; Yarn, 1 ball.
20. Bow Heaving-line, 20 fathoms (2-inch Italian hemp).
21. Stern ditto, 20 fathoms (2-inch ditto).
22. Outside Life-lines, 24 fathoms ($1\frac{1}{2}$ -inch ditto).
23. Drogue-line, 15 fathoms (3-inch Italian hemp).
24. Loaded Cane and Line, 25 fathoms, and Tub for same.
25. One Life-buoy.
26. Cork Life-belts, one for each of the crew, and three spare.
27. Sails.
28. Drogue.
29. Cleaning Gear.
30. Boat Cover } When necessary.
31. Flag }
32. Anchor, 60 to 75 lbs.
33. Stern Grapnel, 25 lbs.
34. Two Heaving Grapnels, 5 lbs.;
1 ditto, 3 lbs.
35. Axe and Two Hatchets.
36. Boat Lantern and Bucket.
37. House Lantern.
38. Tool-chest, equipped.
39. Screw-jack.
40. Hand Lead.
41. Chains for Drag-ropes.
42. Speaking Trumpet.
43. Compass } When necessary.
44. Telescope }
45. Roller-skids and Turn-table.
46. Hauling-off Warp }
47. Hauling-up Tackle }
48. Ditto Pennants }
49. Winch } When necessary.
50. Carronade }
51. Shovels }
52. Rockets and Blue-lights }

In furnishing a Life-boat's equipment, the first duty is to provide her with everything that can contribute to the safety of those employed on this dangerous service ; and secondly, to make her as far as possible independent of all assistance from wrecked vessels, the crews of which are often in a helpless state, perhaps lashed to the rigging, and unable to throw a rope, or even to get from the wreck to the boat without help.

A Life-boat is therefore provided with lines, called Life-lines, some festooned round her sides, by the aid of which any one in the water using them as stirrups can get into her ; others with corks attached are thrown from within her when alongside a wreck, and float on the water all around her. She is also furnished with a Cork Life-buoy, which, with a line attached, can be thrown, or floated, to any one in the water, who might be too distant to reach the life-lines of the boat. She has likewise strong but light lines with grappling-irons attached, one at the bow and another at the stern, which, by being thrown into the rigging or on board a wreck, fasten themselves, so that the boat can be at once held to the wreck without the assistance of any one in her. An anchor and cable ; a good lantern for nightwork ; a compass ; and a drogue or water-bag, which is dragged behind a boat to prevent "broaching-to" when running before a heavy sea, are also necessary to a complete Life-boat's equipment.

In addition to the Life-boat, Transporting Carriage, and Equipment, we must have a suitable *House* to shelter them from the weather when out of use.

Fortunately the Institution was enabled in 1860 to secure the services of Mr. C. H. COOKE, F.R.I.B.A., as its Honorary Architect, and his co-operation in connection with the erection of its Life-boat Houses has been

invaluable. From his plans and specifications upwards of 200 Houses have been constructed at different Life-boat Stations. Thus substantial and well-built houses have been provided, which will probably excite the admiration of those who may celebrate the Centenary of the Institution.

Again, in regard to the Leases and Conveyances of the sites for Boat Houses, the Society has had the able



services of Messrs. CLAYTON & SON as its Honorary Solicitors, to which office they were appointed in 1856. The late Mr. CLAYTON, Sen., rendered important assistance in connection with the Charter of Incorporation granted by Her Majesty to the Institution in 1860, and his two sons, Mr. FRANCIS S. CLAYTON and Mr. CHARLES H. CLAYTON, have since, in conjunction with the Editor, conducted all the legal business of the

Institution, which occasionally is of considerable importance—especially in some intricate cases of bequests, and titles to sites of ground on which the Life-boat Houses are to be built.

In respect to those sites, regard is particularly taken to their convenience, so that they may be handy for launching the Life-boat, and for her easy transport on her Carriage along the coast to the scene of the wreck. The House is usually forty feet long and seventeen feet wide; its doors are fourteen feet wide, and their height about twelve feet. There are folding doors of the above dimensions facing the water; and if it should be deemed an advantage to be able to take the boat on her carriage to the rear of the house, doors of the same dimensions are also placed at that end, otherwise a small door at the rear end suffices. The Life-boat House is usually a substantial building, built of brick or stone, and having a slated roof. A boarding or flooring about six feet in length is placed over the joists at the rear end of the house, to keep the spare stores on; and a batten with wooden pegs for hanging up the life-belts and small lines, is fixed at a convenient height along the side wall. In some of the Life-boat Houses gas has been fitted.

The average expense of a complete Life-boat Station is £800, in addition to £70 a year needed to keep the Establishment in a state of efficiency. The cost is made up as follows:—

Life-boat and her equipment, including Life-belts for the crew, and Transporting Carriage for the Life-boat	£550
Boat House (average cost)	250
Total	£800

CHAPTER XVI.

CHARACTER OF THE SERVICES PERFORMED BY LIFE-BOATS—BRAVERY AND DEVOTION OF THE LIFE-BOAT MEN—SERVICES OF THE RAMSGATE LIFE-BOAT DESCRIBED BY THE REV. J. GILMORE—SERVICES OF THE CULLERCOATS LIFE-BOAT.

SUCH is a history of the important machinery which human genius has contrived, and human sympathy provided, for saving the life and property confided to the waves ; but, valuable as it is, something more is necessary to make it available in Shipwreck. Courage as well as genius is required to put it in action. The dangers to which the crew of a Life-boat are exposed entitle those who encounter them to the greatest credit. It is impossible to exaggerate the awful circumstances attending a Shipwreck. Let us picture the time, when, after a peaceful sunset and the toils of the day are over, the hero of the Life-boat has retired to rest, and the silence of the night is unbroken except by the murmur of the winds, and the noise of the sea breaking on the shore. With the approach of the storm, however, the winds and the waves rise in fury upon the deep, and with their mingled vengeance lash the cliffs and the beach. A signal of distress rouses the coxswain and his men—crowds rush in curiosity to the cliffs, or line the shore, heedless of the driving rain or the blinding sleet. Barrels of tar are lighted on the coast, and the signal gun and the fiery rocket make a fresh appeal to the

brave. The Boat House is unlocked, and the Life-boat, with her crew, is dragged hurriedly to the shore. The storm rages wildly, and the mountains of surf and sea appal the stoutest heart. The gallant men look dubiously at the work before them, and fathers and mothers and wives and children implore them to desist from a hopeless enterprise. The voice of the coxswain, however, prevails. The Life-boat is launched among the breakers, cutting bravely through the foaming mass—now buried under the swelling billows, or rising on their summit—now dashed against the hapless wreck still instinct with life—now driven from it by a mountain wave—now embarking its living freight, and carrying them, through storm and danger and darkness, to a blessed shore. Would that this were the invariable issue of a Life-boat service! The boat that adventures to a wreck meets with disaster itself occasionally; and in the war of the elements some of its gallant crew have sometimes been the first of its victims.

The services performed by the Ramsgate Life-boat, in conjunction with its consorts, the harbour steamers *Vulcan* and *Aid*, have been, beyond comparison, more numerous and daring than those of any other Life-boat in the world. Some of these deeds have found able chroniclers, and it is somewhat embarrassing, on account of their frequency and thrilling interest, to make a selection of the accounts of these noble Life-boat Services, but the following account is published from a recent admirable work,* as it enables the Editor to give some engravings† of Life-boat Services under different aspects.

* *Storm Warriors; or, Life-boat Work on the Goodwin Sands.* By the REV. JOHN GILMORE, M.A., Rector of Holy Trinity, Ramsgate, author of *The Ramsgate Life-boat* in *Macmillan's Magazine*.

† For these sketches the Editor is indebted to the kindness of the eminent artists whose names are appended to them.

THE RAMSGATE LIFE-BOAT AT WORK—A RESCUE.

"Ye mariners of England,
That guard our native seas;
Whose flag has braved a thousand years
The battle and the breeze!
Your glorious standard launch again
To match another foe;
And sweep through the deep,
While the stormy winds do blow,
While the battle rages loud and long
And the stormy winds do blow."

"It was a Sunday night, in the month of February, a few years ago, the anxious boatmen, who kept a diligent watch, shrugged their shoulders as they cast keen glances to windward, and declared that it was going to be a very dirty night.

"Heavy masses of cloud skirted the horizon as the sun set; and as the night drew on; violent gusts of wind swept along, accompanied by snow-squalls.

"It was a dangerous time for vessels in the Channel, and it proved fatal to one at least.

"Before the light broke on Monday morning, the Margate lugger *Eclipse* put out to sea to cruise round the shoals and sands in the neighbourhood of Margate, on the look out for the victims of any disasters that might have occurred during the night.

"The crew soon discovered that a vessel was ashore on the Margate Sands, and directly made for her. She proved to be the Spanish brig *Samaritano* of one hundred and seventy tons, bound from Antwerp to Santander, and laden with a valuable and miscellaneous cargo.

"Her crew consisted of the captain, Modesto Crispo, and eleven men; it was during a violent squall of wind and snow that the vessel was driven on the Sands, at about half-past five in the morning; the crew attempted to get away from the vessel in the boats, but in vain, the oars were broken in the attempt, and the boats stove in.

"The lugger *Eclipse*, as she was running for the brig, spoke a Whitstable fishing-smack, and borrowed two of her men and her boat. They boarded the brig as the tide went down, and hoped to be able to get her off the Sands at the next high water. For this purpose, six Margate boatmen and the two Whitstable men were left on board.

"But with the rising tide, the gale came on again in all its fury, and

the boatmen had speedily to give up every hope of saving the vessel. They hoisted their boat on board to prevent her being swamped by the seas which were breaking heavily, and all hands began to feel that it was becoming a question, not of saving the vessel, but of saving their own lives. The sea rushed furiously over the wreck, lifting her, and then letting her fall with crushing violence upon the sands. Her timbers did not long withstand this trial of their strength; a hole was quickly knocked in her side, she filled with water, and settled down upon the sand.

"The waves began now to break with great force over the deck; the lugger's boat was speedily knocked to pieces and swept overboard; the hatches were forced up, and some of the cargo which floated on the deck was at once washed away. The brig began to roll and labour fearfully, as wave after wave broke against her, with a force that shook her from stem to stern and threatened to throw her bodily upon her broadside; the men, fearing this, cut the weather-rigging of the main mast, and the mast soon broke off short with a great crash, and went over the side.

"All hands now took refuge in the fore-rigging; nineteen men had then no other hope between them and a terrible death than the few shrouds of the shaking mast.

"The wind beat against the poor fellows with hurricane force; each wave that broke against the vessel sprang up in columns of foam and drenched them to the skin; the air was full of spray and sleet, which froze upon them as it fell.

"The Margate boatmen were there, but the Margate lugger could not have lived five minutes in the sea that surrounded the vessel; the Whitstable smack would have been wrecked at once, if she had attempted to get near the wreck, and thus the poor fellows, caught in a trap, had to be left by their comrades to their fate, their only chance of escape being the possibility of a Life-boat coming to their rescue, and this before their frail support should yield to the rush of wind and sea.

"And resting in this hope they waited hour after hour, clinging to the shrouds of the tottering mast; but no help came, until one and all despaired of life.

"In the meanwhile, news of the wreck had spread like wildfire through Margate. In spite of the gale, and the blinding snow squalls, many of the inhabitants struggled to the cliff, and with spy-glasses tried to penetrate the scud, or to gain in the breaks of the storm some glimpses of the wreck.

"As soon as the peril the crew of the brig were in was known, the smaller of the two Margate Life-boats was manned and made to the rescue. As she sailed out into the storm, the seas broke over her and filled her; this her gallant crew heeded little at first, for they had every confidence in

her powers to ride safely through any storm, that her air-tight compartments would prevent her from sinking ; but to the astonishment of the men they found that the boat was rapidly losing her buoyancy, and fast becoming unmanageable ; indeed she was filling with water, which came up to the men's waists. The air-tight boxes had evidently filled ; and they remembered, too late, that the valves, with which each box is provided to let out any water that may leak in, had been left unscrewed in the excitement of starting. Their boat, with the air-tight compartments filled with water, virtually ceased to be a Life-boat, and her crew had to struggle for their own safety. Although then within a quarter of a mile of the brig, there was no help for it, they could make no farther way against the storm ; the boat was unmanageable, and the only chance of life left to the boatmen themselves was to run her ashore on the nearest part of the coast. It was doubtful whether they would be able to succeed even in this ; and it was not until they had battled for four hours with the sea and gale, that they were able to get ashore in Westgate Bay.

“ There the Coastguard were ready to receive them, and did their best to revive the exhausted men. As soon as it was discovered at Margate that the first Life-boat was disabled, the large Life-boat, the *Friend of all Nations*, was got ready with every speed, and with much trouble dragged round to the lee side of the pier, where it was launched. Away she started, her brave crew doing all they could to battle with the gale, and force their way out to the wreck ; but all their efforts were in vain ; the tremendous wind was right against them ; the sea completely overpowered them, and prevented them beating to windward ; the tiller gave way, and after a hard struggle her crew had also to give up the attempt, and this Life-boat in turn was driven ashore about one mile from the town. With both their Life-boats wrecked, the Margate men almost gave up all hopes of saving the crew of the vessel and the men that were left on board ; but this should not be the case until every possible effort had been made ; but it was with small hope for the shipwrecked, and with much apprehension for the boats themselves, that the people watched two luggers—the *Nelson* and the *Lively*—undaunted by the fate of the Life-boats, stagger out mid the sweeping seas to the rescue.

“ The fate of one lugger, the *Nelson*, was soon settled ; a fearful squall of wind caught her before she had got many hundred yards clear of the pier ; it swept her foremast out of her, and her crew had to make every possible effort to avoid being driven on the rocks, and there wrecked.

“ The *Lively* was more fortunate ; she beat her way out to sea, but found so heavy a surf breaking over the Sands, that it was evidently impossible to cross them, or to get near the wreck,

"The Margate people became full of despair, and many a bitter tear was shed for sympathy and for personal loss as they watched the wreck, and thought of the poor fellows slowly perishing before their eyes, apparently without any possibility of being saved.

"A rumour spread among the crowd that the lieutenant of the Coast-guard had sent an express off to Ramsgate, for the Ramsgate steamer and Life-boat; but this scarcely afforded any hope, as it was thought impossible that the steamer and Life-boat could make their way round the North Foreland in the teeth of so tremendous a gale, or if they did so, it was supposed impossible that either the ship could hold together, or the crew live, exposed as they were in the rigging, during the time it would of necessity take the steamer and boat to get to them.

"We now change the scene to Ramsgate.

"From an early hour on the Monday morning, groups of boatmen assembled on the pier at Ramsgate; they were occasionally joined by some of the more hardy among the townsmen, or by a stray visitor, attracted by the wild scene that the storm presented.

"The boatmen could faintly discern, in the intervals between the snow-squalls, a few vessels in the distance, running before the gale, and they were keenly on the watch for signals of distress, that they might hasten to the rescue.

"But no such signal was given.

"Every now and then, as the wind boomed by, some landmen suggested that it was the report of a gun from one, or other, of the three light-vessels, which guard the dangerous Goodwin Sands; but the boatmen shook their heads, and those who with spy-glasses kept a look-out in the direction of the light-vessels confirmed them in their disbelief.

"About nine o'clock, tidings came to Ramsgate that a brig was ashore on the Woolpack Sands off Margate. It was, of course, concluded that the two Margate Life-boats would go to the rescue; and although there was much anxiety and excitement as to the result of the attempt the Margate boatmen would certainly make, no one had the least idea that the services of the Ramsgate Life-boat would be required. But shortly after twelve a Coastguard man from Margate hastened breathless to the pier, and to the harbour-master's office, saying, in answer to eager inquiries as he hurried on, that the two Margate Life-boats had been wrecked, and that the Ramsgate boat was wanted.

"The harbour-master immediately gave orders, 'Man the Life-boat.'

"No sooner had the words passed from his lips than the boatmen, who had crowded round the door in anticipation of the order, rushed away to the boat.

"First come, first in ; not a moment's hesitation, not a thought of further clothing ; they will go as they are, rather than not go at all. The news rapidly spreads ; each boatman as he heard it, hastily snatched up his bag of waterproof overalls, and south-wester cap, and rushed down to the boat ; and for some time boatman after boatman was to be seen racing down the pier, hoping to find a place still vacant ; if the race had been to save their lives, rather than to risk them, it would hardly have been more hotly contested.

"Some of those who had won the race and were in the boat, were ill prepared with clothing for the hardships they would have to endure, for if they had not their waterproofs at hand they did not delay to get them, fearing that the crew might be made up before they got to the boat. But these men were supplied by the generosity of their disappointed friends, who had come down better prepared, but too late for the enterprise ; the famous cork jackets were thrown into the boat and at once put on by the men.

"The powerful steam-tug, well named the *Aid*, that belongs to the harbour, and has her steam up night and day ready for any emergency that may arise, speedily got her steam to full power, and with her brave and skilful master, DANIEL READING, in command, took the boat in tow, and together they made their way out of the harbour. JAMES HOGBEN, who, with READING, has been in many a wild scene of danger, was coxswain, and steered and commanded the Life-boat.

"It was nearly low water at the time, but the force of the gale was such as to send a good deal of spray dashing over the pier ; the snow fell in blinding squalls, and drifted and eddied in every protected nook and corner. It was hard work for the excited crowd of people, who had assembled to see the Life-boat start, to battle their way through the drifts and against the wind, snow, and foam to the head of the pier ; but there at last they gathered, and many a one felt his heart fail as the steamer and boat cleared the protection of the pier, and encountered the first rush of wind and sea outside. 'She seemed to go out under water,' said one old fellow ; 'I would not have gone out in her for the universe.' And those who did not know the heroism and determination that such scenes call forth in the breasts of the boatmen, could not help wondering much at the eagerness which had been displayed to get a place in the boat—and this although the hardy fellows knew that the two Margate Life-boats had been wrecked in the attempt to get the short distance which separated the wreck from Margate ; while they would have to battle their way through the gale for ten or twelve miles before they could get even in sight of the vessel.

"It says nothing against the daring or skill of the Margate boatmen, that they failed. In such a gale they could not get to windward against wind and

tide, success therefore was almost impossible without the aid of steam ; with a steam-boat to tow them into position for dashing in upon the Sands, the Margate boats would in all probability have succeeded ; without such assistance the Ramsgate boat would certainly have failed. As soon as the steamer and boat got clear of the Ramsgate pier, they felt the full force of the storm, and it seemed almost doubtful whether they could make any progress against it. They slowly worked their way out of the full strength of the tide, as it swept round the head of the pier, and then began to move ahead a little more rapidly, and were soon ploughing their way through a perfect sea of foam.

"The steamer, with its engines working full power, plunged heavily along ; wave after wave broke over its bows, sent its spray flying over the funnel and mast, and deluged the deck with a tide of water, which, as it rushed aft, gave the men enough to do to hold on.

"The Life-boat was towing astern with fifty fathom of five-inch hawser out, an enormously strong rope about the thickness of a man's wrist. Her crew already experienced the dangers and discomforts, that they were ready to endure, perhaps, for many hours, and without a murmur, in order to save life.

"There was anxiety and fear, but the one thought of anxiety and fear was, as to whether they could possibly be in time to save the lives of the poor fellows, who must, for so many hours, have been clinging to a shattered wreck. It would be hard to give a description to enable one to realise the position of the men in the boat, as they were being towed along by the steamer. The use of a Life-boat is, that it will float and live, where other boats would of necessity be swamped, upset, and founder ; they are made for, and generally only used on, occasions of extreme danger and peril, for terrible storms and wild seas.

"The water flows into the boat, and over it, and it still floats : some huge wave will break over it, and for a moment bury it, but it rises in its buoyancy and shakes itself free ; beaten down on its broadside by the waves and wind, it struggles hard, and soon rises again on an upright keel, and defies them to do their worst ; and even if some mighty breaker should come rushing along, catch her in its curling arms, and bodily upset her, only for a few seconds would the triumph last, the boat would speedily right again, sitting like an ark of refuge in the boiling sea of foam, while her crew, upheld by their cork jackets, would be floating and struggling around her, until one after another would manage to regain her sides, and clamber in over her low gunwale at the waist, and shortly she would be speeding away again on her life errand. Such were the qualities of the noble boat, which we are watching, while she is urging her way through the dismal seas, while



Drawn by Capt. May, R.N.]

THE LIFE-BOAT IN TOW.

To face p. 120.

a dozen poor fellows, some nine or ten miles off, are hanging to the shaking shrouds of a tottering mast, the waves that are breaking over them threatening every moment to be their tomb.

“Away! away, then, brave boat! gallant crew! God grant you good progress!

“Since the moment of clearing the pier, the waves that broke over the boat filled her time after time, and did everything but drown her. The men were up to their knees in water; they bent forward as much as they could, each with a firm hold upon the boat.

“The spray and waves rushed over them, and as they beat continuously upon their backs, although they could not penetrate their waterproof clothing, still they chilled them to the bone, for, as the spray fell, it froze, indeed so bitter was the cold that the men’s mittens were frozen to their hands.

“After a tremendous struggle the steamer seemed to be making head against the storm; they were well clear of the pier and getting on gallantly. They made their way through the Cudd Channel, and had passed between the black and white buoys, so well known to Ramsgate visitors, when a fearful sea came heading towards them. It met and broke over the steamer, buried her in foam, and swept along.

“The Life-boat rose to it, for a moment hung with her bows high in air, and then as she felt the strain of the tow-rope, plunged bodily into the wave, and was almost altogether under water; the men were nearly washed out of her, but at that moment the tow-rope broke, the wave threw the boat back with a jerk, and as the strain of the rope suddenly ceased, the boat fell across the seas which swept in rapid succession over her, and seemed completely at their mercy. Oars out! oars out! was the cry, and the men, as soon as they could get breath, got them out, and began to make every effort to get the boat round again, head to wind, but in vain, the waves tossed the oars up, the wind caught the blades, and it was as much as the men could do to keep them in their hands. The gale was too heavy for them, and they drifted rapidly before wind and tide towards the Brake Shoal, which was directly under their lee, and over which the seas were rushing with great violence. But the steamer, which throughout was handled most admirably, both as regards skill and bravery, was put round as swiftly as possible, and very cleverly brought within a few yards to windward of the boat, as she lay athwart the sea.

“The men on board the steamer threw a hauling line on board the boat to which was attached a brand new hawser, and again took the boat in tow.

“The tide was still flowing, and as it rose, the wind came up in heavier and heavier gusts, bringing with it a blinding snow and sleet, which,

with the spray, still freezing as it fell, swept over the boat, till the men looked, as one said at the time, like a body of ice.

"The men could not look to windward for the drifting snow and blinding seas which were continually rushing over them, they only knew that the strong steamer was plunging along, taking all as it came, for they felt the strain on the rope ; thus they realised that each moment's suffering and peril brought them nearer to their poor perishing fellow-sailors ; and not one heart failed, not one repented of winning the race to the Life-boat.

"Off Broadstairs, they suddenly felt the way of the boat stop. The rope broken again, was the first thought of all ; but on looking round as they were enabled to do, as the boat was no longer being dragged through the seas ; they discovered to their utter dismay that the steamer had stopped ; they thought that her machinery had broken down, and at once despaired of saving the lives of the shipwrecked, for with the wind as it was, it would be long hours before they could beat up against the gale, and get to the Sands, on which they were told the wreck lay ; a moment's suspense and they discovered, to their gladness, that the steamer had merely stopped to let out more cable, fearful that it might break again in the struggle that was before them, as they fought their way round the North Foreland.

"Another hour's hard struggle, and they reached the North Foreland. There the sea was running tremendously high—the gale was still increasing ; the snow, sleet, and spray, rushed by with hurricane speed.

"Although it was only early in the afternoon, the air was so darkened by the storm that it seemed a dull twilight. The captain of the boat was steering ; he peered out between his collar and cap, but looked in vain for the steamer. He knew that she was all right, for the rope kept taught ; but many times, although she was only a hundred yards ahead, he could see nothing of her, still less able were the men on board the steamer to see the Life-boat.

"Often did they anxiously look astern, and watch for a break in the drift and scud to see that she was all right ; for although there could be no doubt as to the strain upon the rope, she might be towing along bottom up, or have all her men washed out of her, for all they could tell. The master of the steamer watched the seas which broke over the *Aid*, making her stagger again, as they rushed towards the Life-boat, and several times the fear that she was gone came over him. But steamer and Life-boat still battled successfully against the storm.

"As soon as they were round the North Foreland, the snow squall cleared and they sighted Margate ; all anxiously looked for the wreck, but nothing of her could they see. They saw a lugger riding just clear of the

pier, with foremast gone, and anchor down to prevent her being driven ashore by the gale. They next sighted the Margate Life-boat driven ashore and abandoned in Westgate Bay, looking a complete wreck, the waves beating over her. A little beyond this they caught sight of the second Life-boat, also washed ashore ; and then they learnt to realise to the full the gallant efforts that had been made to save the shipwrecked, and the destruction that had been wrought as effort after effort had been overcome by the fury of the storm. But where was the wreck ? Had she been beaten to pieces, all lives lost, and were they too late ? A heavy mass of cloud and snow-storm rolled on to windward of them in the direction of the Sands off Margate, and they could not make out any signs of the wreck there.

“There was just a chance that it was the Woolpack Sand that she was on. They thought it the more likely, as the first intelligence of the wreck that came to Ramsgate declared that such was the case ; and accordingly they determined to make for the Woolpack Sand, which was about three miles farther on ; they had scarcely decided upon this, when, providentially, there was a break in the drift of the snow to windward, and they suddenly caught sight of the wreck. But for this sudden clearance in the storm they would, as we have said, have proceeded farther on, and some hours must have passed before they could have found out their mistake and got back again, and by that time every soul of the poor shipwrecked crew must have perished.

“The master of the steamer made out the flag of distress flying in the rigging of the vessel, the ensign union downwards ; she, doubtlessly, was the wreck of which they were in search.

“But still it was a question how they could get to her, for she was on the other side of the Sand. To tow the boat round the Sand would take a long time in the face of such a gale ; and for the boat to make across the Sand seemed almost impossible, so tremendous was the sea that was running over it.

“Nevertheless there was no hesitation on the part of the Life-boat crew. It seemed a forlorn hope, a very rushing upon destruction, to attempt to force the boat under canvas through such a surf and sea ; but they looked at the tottering wreck ; they felt how any moment might be the last to the poor fellows clinging to her, and they could not bear to think of the delay that would be occasioned by their going round the Sands.

“Without hesitation, therefore, they cast off the tow-rope, and were about setting sail, when they found that the tide was running so furiously that they must be towed at least three miles to the eastward before they would be sufficiently far to windward to make certain of fetching the wreck.

"It was a hard struggle to get the tow-rope on board again, tossed about as they were by the tumbling seas, and a bitter disappointment to all, that an hour, or more, of their precious time must be consumed before they could possibly get to the rescue of their endangered brother seamen ; but there was no help for it, and away again they went in tow of the steamer. The snow-squall came on again, and they lost sight of the wreck, but all kept an anxious look-out, and now and then, in a break in the squall, they could catch a glimpse of her. They could see that she was almost buried in the waves which broke over her in great clouds of foam, and again many and weary were the doubts and speculations, as to whether any on board of her could still be alive. For twenty minutes or so they battled steadily on against wind and tide.

"The gale, which had been increasing since the morning, came on heavier than ever, and roared like thunder over head ; the sea was running so furiously and meeting the Life-boat with such tremendous force that the men had to cling on their hardest not to be washed out of her, and at last the new tow-rope could no longer resist the increasing strain, and suddenly parted with a tremendous jerk ; there was no thought of picking up the cable again—they could stand no further delay, and one and all of her crew rejoiced to hear the captain of the Life-boat give orders to set sail."

THE RESCUE OF THE CREW OF THE "SAMARITANO," AND THE RETURN.

"HARDER still the gale, and the rush of the sea and the blinding snow. The storm was at its height. As the Life-boat headed for the Sands, a darkness, as of night, seemed to settle down upon the men ; they could scarcely see each other ; but on through the raging sea and blinding storm they drove the gallant boat. As they approached the shallow water, the high part of the Sand, where the heaviest waves were breaking, they could see spreading itself before them, standing out in the gloom, a white, gleaming, barrier wall of foam ; for there as the rushing waves broke, they clashed together in their recoil, and mounted up in columns of foam, their heavier volume falling, and their crests caught by the wind and carried away in white streaming clouds of spray, while the fearful roar of the beat of the waves could be heard above the gale.

"But still straight for the breakers the men made. No faltering, no

hesitation, brows knit, teeth clenched, hands ready, and hearts firm, and into it with a cheer.

"The boat, although under the smallest sail she could carry—a double reefed foresail and mizen—was driven on by the hurricane force of the wind, on through the outer range of breakers she plunged, and then came indeed a struggle for life.

"The waves no longer rolled on in foaming ranks, but leapt, and clashed, and battled together in a raging boil of sea. They broke over the boat, the surf poured in first on one side of the boat, and then on the other, as she rolled to starboard and port, wildly tossed from side to side. Some waves rushed bodily over the boat, threatening to sweep every man out of her. Look out, my men! hold on! hold on! was the cry. When they saw some huge breaker heading towards them like an advancing wall, then the men threw themselves breast down on the thwart, curled their legs under it, clasped it with all their force with both arms, held their breath hard, and clung on for very life against the tear and wrestle of the wave, while the rush of water poured over their backs and heads, and buried them in its flood. Down, down, beneath the weight of the water, the men and boat sank; but only for a moment; the splendid boat rose in her buoyancy, and freed herself of the seas, which for a moment had overcome her and buried her, and her crew breathed again; and a struggling cry of triumph rises from them. Well done, old boat! well done! all right! all right! Yes, all hands here, no one washed out of her; and with a quick glance of mutual congratulation they look at each other, and rejoice that all are safe, scarce time for a word. 'Now she goes through it, now she's forging ahead keep a tight hold, my boys!' A moment's lull, as she glided on the crest of some huge wave, or only smaller ones tried their strength against her; then again the monster fellows came heading on, again the warning cry was given; look out! hold on! hold on! and the men crouched, and clung, and struggled for their lives, while the wild waves rushed over the boat.

"Thus until they got clear of the Sands the fearful struggle was again and again repeated; but at last it was for a time over, they had burst through the belt of raging surf and got again into deep water. They had then only the huge rolling waves and less broken tumble of sea to contend with; this, in such a furious gale of wind, was bad enough, and almost more than any other kind of boat could have endured, but little in comparison to what they had just gone through, and escaped from.

"The boat was now put before the wind, and every man in her was on the look-out for the wreck. For a time it remained so thick that there was no possibility of finding her, when again a second time a sudden break in the storm revealed her; she was about half a mile to leeward.

"They shifted the foresail with great difficulty, and again made in for the Sands towards the vessel. The appearance of the wreck as they approached her made even the stoutest among them shudder.

"She had settled down by the stern in the Sands, the uplifted bow being the only part of the hull that was to be seen ; the sea was making a clean breach over her.

"The mainmast was gone, her foresail and foretopsail were blown adrift, and great columns of foam were mounting up, flying over her foremast bow. They saw a Margate lugger lying at anchor just clear of the Sands, and made close to her. As they shot by they could just make out, mid the roar of the storm, a loud hail, eight of our men on board ! and on they flew, and in a few minutes were in a sea that would instantly have swamped the lugger, noble and powerful boat though she was.

"Approaching the wreck, it was with terrible anxiety they strained their sight, trying to discover if there were still any men left in the tangled mass of rigging, over which the sea was breaking so furiously. By degrees they made them out. 'I see a man's head, look ! one is waving his arm.'—'I make out two ! three ! why the rigging is full of the poor fellows ;' and with a cheer of triumph, at being yet in time, the Life-boat crew settled to their work.

"The wreck of the mainmast, and the tremendous wash of sea over the vessel, prevented their going to the lee of the wreck. This increased their danger tenfold, as the result proved.

"When about forty yards from the wreck, they lowered their sails, and cast the anchor over the side. The moment for which the boat had so gallantly battled for four hours, and the shipwrecked had waited almost in despair for eight hours, had at last arrived.

"No cheering ! no shouting in the boat now, no whisper beyond the necessary orders ; the risk and suspense are too terrible ! yard by yard, the cable is cautiously payed out, and the great rolling seas are allowed to carry the boat, little by little, nearer to the vessel. The waves break over the boat, for a moment bury it, and then as the sea rushes on, and breaks upon the wreck, the spray, flying up, hides the men lashed to the rigging from the boatman's sight. They hoist up a corner of the sail to let the boat sheer in ; all are ready ; a huge wave lifts them. Pay out the cable ! sharp men ! sharp ! the coxswain shouts ; belay all ! The cable was let go a few yards by the run, and the boat is alongside the wreck. With a cry, three men jump into the boat and are saved ! All hands to the cable ! haul in hand over hand, for your lives, men, quick, the coxswain cries ; for he sees a tremendous wave rushing in swiftly upon them. They haul in the cable, draw the boat a little from the wreck, the wave passes and breaks



Drawn by the late EDWIN WEEDON, Esq.]

THE LIFE-BOAT UNDER SAIL.

To face p. 136.

over the vessel ; if the Life-boat had been alongside she would have been dashed against the wreck, and perhaps capsized, or washed over, and utterly destroyed. Again the men watch the waves, and as they see a few smaller ones approaching, let the cable run again, and get alongside ; this time they are able to remain a little longer by the vessel ; and one after another, thirteen of the shipwrecked men unlash themselves from the rigging and jump into the boat, when again they draw away from the vessel in all haste, and avoid threatened destruction.

“ ‘Are they all saved ?’ No ! three of the vessel’s crew, Spaniards, are still left in the rigging ; they seem almost dead, and scarcely able to unlash themselves, and crawl down the shrouds and await the return of the boat.

“ ‘Again the boat is alongside, and this time the peril is greater than ever. They must place the boat close to the vessel, for the men are too weak to make any spring to reach her ; they must remain alongside for a longer time, for two Life-boatmen must get on to the wreck and lift the men on board ; but, as before, they go coolly, quietly, and determinedly to work ; the cable is veered out, the sail manœuvred to make the boat sheer, and again she is alongside ; the men are seized by their arms and clothing, and dragged into the boat.

“ ‘The last one left is the cabin-boy ; he seems entangled in the rigging. The poor little fellow had a canvas bag of trinkets and things, he was taking as presents to the loved ones at home, and all through the howling storm, the rush and beat of the waves, as he held on exhausted and half dead to the shrouds, he still thought of those loved friends, and clung to the canvas bag.

“ ‘God only knows whether the loved ones at home were thinking of, and praying for him, and whether it was in answer to their prayers and those of many others that the Life-boat then rode alongside that wreck, an ark of safety mid the raging seas.

“ ‘They shout, the boy lingers still, his half dead hands cannot free the bag from the entangled rigging. A moment and all are lost ; a boatman makes a spring, seizes the lad with a strong grasp, and tears him down from the rigging into the boat—too late, too late ; they cannot get away from the vessel ; a tremendous wave rushes on ; hold hard all, hold anchor ! hold cable ! give but a yard, and all are lost ! The boat lifts, is washed into the fore-rigging, the sea passes, and she settles down again upon an even keel ! Thank God ! If one stray rope of all the torn and tangled rigging of the vessel had caught the boat’s rigging, or one of her spars—if the boat’s keel or cork fenders had caught in the shattered gunwale, she would have turned over, and every man in her been shaken into the sea to

speedy and certain death. Thank God, it is not so, and once more they are safe.

"The boat is very crowded ; she has her own crew of thirteen on board, six of the Margate boatmen and two Whitstable fishermen, who were left on the vessel, the captain, mate, eight seamen and the boy ; thus, thirty-two souls in all form her precious freight.

"The Life-boatmen at once, without a second's delay, haul in the cable as fast as possible, and draw up to the anchor to get clear of the wreck, for they must get some distance away before they dare let go their cable, or with the wind and seas setting directly towards the vessel they would be driven upon her, unless they had plenty of room to sail by her.

"An anxious time it is as they draw up to the anchor ; at last they are pretty clear, and hoist the sail to draw still farther away before they let go.

"There is no thought of getting the anchor up in such a gale and sea.

"*'She draws away,'* cries the captain of the boat, *'pay out the cable ; stand by to cut it ; pass the hatchet forward ; cut the cable, quick, my men, quick.'* There is a moment's delay, a delay by which indeed all their lives are saved ; a few strong blows with the hatchet, and the cable would have been parted. A boatman takes out his knife, and begins gashing away at the hawser. Already one strand out of the three, which form the strong rope, is severed ; when a fearful gust of wind sweeps by, the boat heels over almost on her side—a crash is heard, and the mast and sail are blown clean out of the boat.

"Never was a moment of greater peril. Away in the rush of the wave the boat is carried straight for the wreck ; the cable is paid out and is slack ; they haul it in as fast as they can, but on they are carried swiftly, apparently to certain destruction. Let them hit the wreck full, and the next wave must throw the boat bodily upon it, and all her crew will be swept at once into the sea ; let them but touch the wreck, and the risk is fearful ; on they are carried, the stem of the boat just grazes the bow of the vessel, they must be capsized by the bowsprit and entangled in the wreckage ; some of the crew are ready for a spring into the bowsprit to prolong their lives a few minutes, the others are all steadily, eagerly, quietly, hauling in upon the cable might and main, as the only chance of safety to the boat and crew ; one moment more and all are gone, one more haul upon the cable, a fathom or so comes in by the run, and at that moment it mercifully taugtens and holds ; all may yet be safe ! another yard or two and the boat would have been dashed to pieces.

"They again haul in the cable, and draw the boat away as rapidly as they can from the wreck, but they do it with a terrible dread, for they

remember the cut strand of the rope. Will the remaining two strands hold? The strain is fearful, each time that the boat lifts to a wave, the cable tightens and jerks, and they think it breaking; but it still holds, and a thrill of joy passes through the heart of all, as they hear that the cut part of the rope is safely in the boat.


"But the danger is not even yet over: all this time the mast and sail have been dragging over the side of the boat; it is with great difficulty that they get them on board.

"The mast had been broken short off about three feet from the heel.

"They chop a new heel to it, and rig it up as speedily as they can, but it takes long to do so; for the boat is lying in the trough of the sea, and the waves are constantly breaking over her; moreover, she is so crowded that the men can scarcely move, and the gale is blowing as hard as ever.

"For the poor Spaniards, as they cling to each other, the terrors of death seem scarcely passed away; they know nothing of the properties of the Life-boat, and cannot believe that it will live long in such a sea. As the waves beat over the boat and fill it, they imagine that she will founder, and each time that the great rolling seas launch themselves at her they cling to each other, expecting that she will capsize; besides, the poor fellows' nerves are not in a very good state; for eight hours they have been in great danger, for a large portion of that time in momentary expectation of death, during the four hours they were lashed to the rigging of the wreck, with the life nearly beaten and frozen out of them by the constant rush of sea and of spray, and by the bitter wind.

"One of the Spaniards seeing a life-belt lying down, which one of the crew had thrown off in the hurry of his work, sits upon it by way of making himself doubly safe. But the work goes on. At last the mast is fitted and raised. No unnecessary word is spoken all this time, for the life and death struggle is not yet over; nor, indeed, can it be before they are well away from the neighbourhood of the wreck. Now, as they hoist the sail, the boat gradually draws away; the cable is again paid out little by little; as soon as they are well clear of the vessel they cut it, and away they sail. The terrible suspense is over when each moment was a moment of fearful risk. It had lasted from the time when they let go the anchor to the time when they got clear of the vessel—about one hour. The men could now breathe freely, their faces brighten, and from one and all there arises spontaneously a pealing cheer. They are no longer face to face with death, and thankfully and joyfully they sail away from the sands, the breakers, and the wreck.

"The gale was still at its height, but the peril they were in then seemed nothing to what they had gone through, and had happily left behind. 

the great reaction of feeling, the freezing cold and sleet, the driving wind, and foam, and sea, were all forgotten ; and they felt as light-hearted as if they were out on a pleasant summer's cruise. They could at last look round and see who they had in the boat, speak hearty words of congratulation to the Margate and Whitstable men, some of whom they knew, and strive by a good deal of broken English, and slaps on the back, and shaking of hands, to cheer up the Spanish sailors, and to let them know how glad they are to have saved them. They then proceeded in search of the steamer, which, after casting the Life-boat adrift, made for shelter to the back of the Hook Sand, not far from the Reculvers, and there waited, her crew anxiously on the look-out for the return of the Life-boat.

"As they were making for the steamer, the lugger *Eclipse* came in chase to hear whether they had succeeded in saving all hands, and especially, whether all the men of her crew were saved. They welcomed the glad tidings with three cheers for the Life-boat crew, and made in for the land. Soon after, the Whitstable smack made towards them upon a similar errand, and her crew were equally rejoiced to hear that their ship-mates with all hands were safe. It was too rough, a great deal, for the men to be taken on board the smack ; and so she, after speaking them, tacked in for the land.

"The night was coming on apace ; it was not until they had run three or four miles that they sighted the steamer ; and when they got alongside her it was a difficult matter to get the saved crew on board. The sea was raging and the gale blowing as much as ever, and the steamer rolled and pitched heavily ; the poor shipwrecked fellows were too exhausted to spring for the steamer as the opportunities occurred, and had to be almost lifted on board, one poor fellow being hauled on board by a rope. Again the boat was taken in tow, almost all her crew remaining in her, and they commenced their return home. The night was very dark and clear ; the sea and gale had lost none of their force ; and until the steamer and boat had got well round the North Foreland, the struggle to get back was just as great as it had been to get there.

"Once round the Foreland the wind was well on the quarter, and they made easier way ; light after light opened to them ; Kingsgate and Broadstairs were passed, and at last the Ramsgate pier-head light shone out with its bright welcome, and the men began to feel that their work was nearly over.

"A telegram had been sent from Margate in the afternoon, stating that the Ramsgate Life-boat had been seen to save the crew ; but nothing more had been heard. The boatmen had calculated the time when they thought the steamer and Life-boat might both be back ; and the fearful violence of

the storm suggested some sad occasion for the delay. As hour after hour grew on, the anxiety increased ; real alarm was beginning to be felt by all, and a keen watch was kept for the first appearance of the steamer and boat round the edge of the cliff.

“As the tide went down, and the sea broke less heavily over the pier, the men could venture farther along it, until, by the time of the boat's return, they were enabled to assemble at the end of the pier, and there a large and anxious crowd gathered. The anxiety of all was increased by the suggestions and speculations of disasters, which always present themselves at a time of suspense and apprehension ; and so, when the steamer was announced with the Life-boat in tow, the reaction was great, and the watchers shouted for very joy.

“And as the ‘Storm Warriors’ entered the harbour waving the strong right arms that had worked so well, and shouted, ‘All saved !’ ‘All saved !’ and the flags of triumph were seen flying out in the gale, cheer after cheer broke from the crowd as they welcomed home from the dread battle-field those who had fought and conquered, and now bore with them as trophies of their victory, nineteen men ; fellow-sailors, whose lives had been saved from a terrible and certain death. And many cheered again as they thought of the number who would have had life-long cause to mourn, if these poor fellows had perished. Parents, wives, children—what a group they would seem if they could be pictured watching the saved ones return ; what words, and looks, and tears of thanks where feelings are too deep for words, for the Storm-Warriors, and for the Life-boat cause, and for the generous English people who placed such boats at the disposal of such brave hearts and strong hands—of men ready to dare all and to do all that men can do to rescue the perishing from death.

“Think only of the group that may possibly welcome back the little pale, exhausted cabin-boy, their hearts as warm as his, their love as deep as his—as his, which made that little canvas bag full of simple presents so dear to him that he held to it through all the many hours of the storm ; that made it his first thought when the wild seas rushed over the vessel, and the crew had to take to the rigging ; love that made him, when grown men thought only of their own lives, rush to his chest and seize his treasure, and all through the wild gale cling to it ; cling to it still, though the winds in their bitter cold froze him through and through, and the seas beat over him hour after hour. Think of the faces that may have seemed to peer at him out of the darkness of the storm. A loving-hearted father ready to thank him for the tobacco-box ; a mother for that wonderful brooch ; a little dark-eyed brother for the knife with four blades, and a little sister for the little very blue-eyed doll with such rosy cheeks. No, he could not let the

bag go, and so it nearly cost him his life, and by the delay his clinging to it caused, nearly cost all the brave men their lives also ; but the good God would not let so much simple love work so much disaster, and the loving ones shall see him again, and perhaps he will stand, and perhaps each of his fellow-sailors will stand, in the centre of some tearful group, who again and again will weep, and thank God, as they are told of the wreck, and the hours of peril, and the waiting for death, and the hopeless despair, and the strange wonderful boat that came in through the storm ; and how they were saved, when they never thought to see home again. And often shall the brave boatmen be blessed and thanked by grateful hearts, and the Life-boat cause not forgotten. I repeat the picture that we may learn to think much of the sailor's arrival home, as well as of his being saved from the wreck, and thus learn to appreciate the more the value and the mercy of Life-boat work.

But to return. The Spanish sailors had, by the time they reached the harbour, somewhat recovered under the care of the Life-boat crew, and were further well cared for, and supplied with clothes by the care of the Spanish consul. And the hardy English boatmen did not take long to recover from their exposure and fatigues, fearful as they had been.

The Spanish captain, in speaking of the rescue, was almost overcome by his feelings of gratitude and wonder. He had quite made up his mind for death ; he felt that the wreck could not by any possibility hold together much longer ; every moment he expected a final crash ; and all his experience taught him that it was impossible for any boat to come to their rescue in such a fearful sea. His experience of the Life-boat was new, and not easily to be forgotten.

He had a painting made of the rescue to take with him and show to the Spanish Government. It is pleasing to be able to wind up this story with stating, that the English Board of Trade acknowledged the bravery and exertions of the men engaged in the rescue, by presenting to each of them 2*l.* and a medal, and that the Spanish Government also gratefully acknowledged the heroic exertions of the men, by granting to each a medal and 3*l.*

Again, the following is an account of a noble service performed by the Cullercoats, Northumberland, Life-boat ; it is taken from the 'Life-boat Journal,' vol. iv. p. 494 :—

“ On a New Year's morning some years since a severe tempest was experienced on our north-east coast, and soon after daybreak the coastguard-

men on the look-out at the Spanish Battery, Tynemouth, saw a vessel, deeply laden, with a flag of distress flying. She was struggling to get to the northward, but struggling in vain, and rapidly driving in upon the coast. The coastguard-men followed her along the shore with the rocket apparatus, and, as they went on, the people of the villages turned out to join them ; so that, ere long, each headland had its anxious crowd, looking—pitying—trembling. It was a very sad sight to see. Some of the vessel's sails had been blown away, and she grew more and more unmanageable amid the terrible seas that broke around and over her. At length, abandoning the desperate effort to get to the northward, her crew, as the last chance of life, ran her for Whitley Sands, five miles north of Shields. She was so deeply laden, that she struck on a ridge of sunken rocks and was still three-quarters of a mile from the shore. It was impossible to reach her with rockets. Only one hope remained—the Life-boat ! As fast as they could run through the snow, driving wind, and rain, Life-boat men and fishermen made off for Cullercoats for the Life-boat, belonging to the NATIONAL LIFE-BOAT INSTITUTION. Six horses were fastened to her carriage, and down they came at a gallop to the sands. She was speedily manned—by a gallant crew of Cullercoats men, who pulled out as for their own lives ; and not a moment too soon did they reach the ship, which was now broadside on to the sea, her crew in the rigging, and the waves breaking over her half-mast high. Cleverly and deftly was the Life-boat laid alongside ; the vessel was grappled, and the boat held to her by a strong rope. Instantly the crew made towards their deliverers ; but even as they left the rigging, one man was much cut in the face and head, the mate had his shoulder dislocated, and three of them were swept into the sea. The Life-boat was handled with a glorious skill ; two of the crew were at once picked up, and as the third man went down to his death, a strong hand seized him, with a grasp of iron, by his hair, and dragged him up to life. Two other men were got into the boat. Did any remain on board the ship ? Yes : how overlooked, how so left to die, we know not—but the little cabin-boy remained. The boy's cry for help grew very pitiful : for some time he dared not venture out of the weather rigging ; at last he did so, and was seen in the lee shrouds : 'he had got wounded in the head, and was covered with blood.' One of the Life-boat's crew has since said that every face around him grew white and sick, and tears came from eyes little used to shed them—'They clenched their teeth, and with their own lives in their hands,' dashed in their boat to save him. The sea beat her back. They dashed in again, to be swept back once more. Again and again they tried : the poor boy, meanwhile, crying terribly in his great loneliness and despair. He was *so* young, and the coast was *so* near ! But

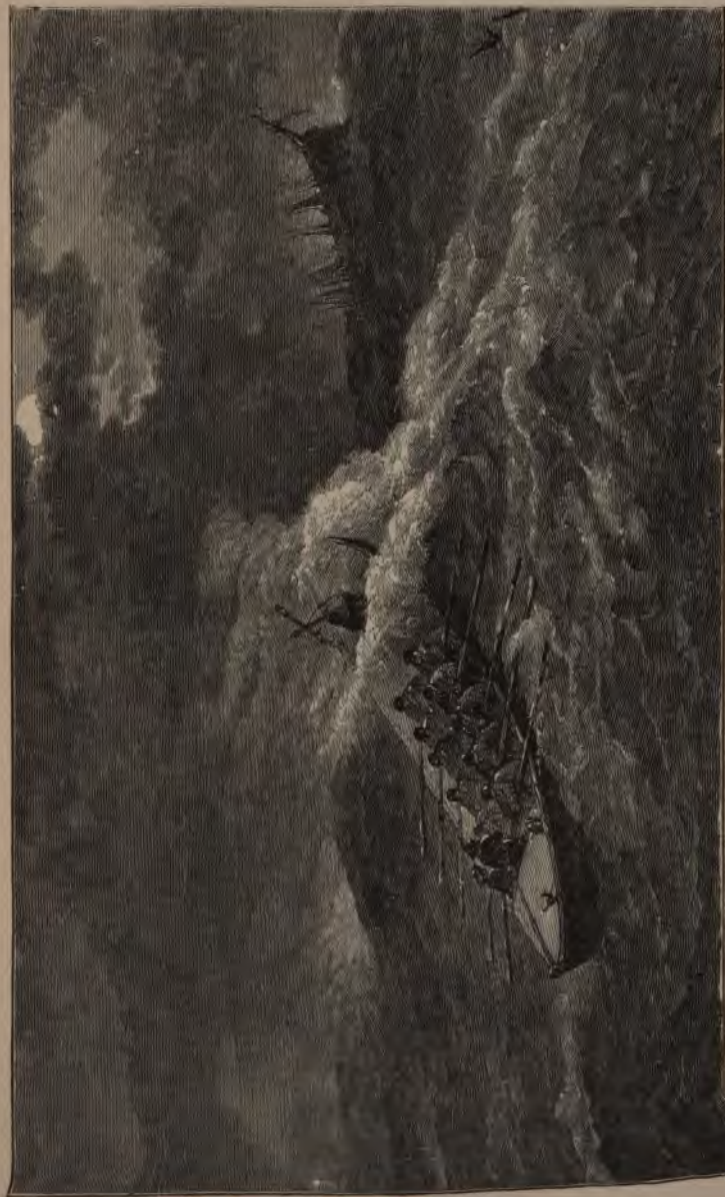
the vessel began to part, and the unstepped masts must fall, and would crush the Life-boat if she stayed one minute longer in her then position. Then sacrificing one life to save many, a brave man gave the order, in a hoarse broken voice, to 'cut the rope.' In an instant she was swept away under the vessel's stern—not a second too soon, for at once the mainmast fell, with an awful crush, on the very spot she had just left, and the vessel immediately broke up. The boy—'his face was covered with blood'—fell into the sea. Clenched in agony or clasped in prayer, his little hands were seen once—twice—lifted above the waves! the Life-boat again rushed towards him, but the tempest swept away his poor boyish cry before the roar and tumult of the winds: he did not rise again. The Life-boat was pulled back to the land.

"Imagine, if you can, how every heart on shore beat fast and hot: how, running to the Life-boat, dashing into the surf, the men would drag her ashore; imagine, if you can, how the saved would feel, and how the brave would sorrow for the lost! and is not such work infinitely grand and noble?"

JESU! bless our slender boat,
By the torrent swept along;
Loud its threatenings—let them not
Drown the music of a song
Breathed Thy mercy to implore,
Where these troubled waters roar!

Guide our bark among the waves;
Through the surf our passage smooth;
Where the whirlpool frets and raves
Let Thy love its anger soothe:
All our hope is placed in Thee;
Miserere Domine!

WORDSWORTH.



EDWARD DUNCAN, Esq.]

THE LIFE-BOAT NEARING THE WRECK.

To Isaac P. 134.

Drawn by

CHAPTER XVII.

THE ORGANISATION OF LIFE-BOAT STATIONS—LOCAL COMMITTEES AND HONORARY SECRETARIES — COXSWAINS AND CREWS — REWARDS GRANTED BY THE INSTITUTION—REPORTS FROM LIFE-BOAT STATIONS — GIFT LIFE-BOATS — RESTORATION OF THE APPARENTLY DROWNED—MANAGEMENT OF OPEN BOATS—SAFETY FISHING BOATS—BAROMETERS—SHIPS' LIFE-BOATS — LIFE-BELTS FOR SEAMEN — FOREIGN LIFE-BOAT SOCIETIES — PROGRESS OF THE NATIONAL LIFE-BOAT INSTITUTION—ITS NEED OF CONTINUED SUPPORT.

THE boats of the NATIONAL LIFE-BOAT INSTITUTION are kept in charge of paid coxswains, under the general superintendence of Local Honorary Committees of residents in the several localities. It should here be mentioned how greatly the Institution is indebted to the valuable and zealous co-operation afforded to it by its Local Branch Committees and their Honorary Secretaries, constituting as they do so important a portion of the machinery for the supervision of its numerous Life-boat Establishments.

Each boat has its appointed coxswain at a salary of £8, and an assistant at £2 a year. The crew consists, in addition, of a bowman, and as many boatmen as the boat pulls oars. The members of the volunteer crews are enrolled, and, wherever practicable, at least double the number of men required should be so. Such men are mostly resident boatmen, fishermen, or Coastguardmen. Anything like unseemly rivalry on the part of the crews of Life-boats has of course to be repressed; but

it happens occasionally that the usual skilful men are not to be procured at the moment when the boat's services are required, some perhaps being ill, others at sea, or engaged in avocations at a distance—in such cases the first well-known oarsman who arrives at the scene of action and secures a Life-belt, has at once his claim acknowledged to a seat in the boat. It is certainly remarkable to observe how unflinching and ceaseless has been the emulation of the men on these occasions, notwithstanding that it is manifest they will sometimes have to encounter frightful peril and exposure.

On every occasion of going afloat to save life, the coxswain and each man of the crew receive alike from the funds of the Institution (whether successful or not) 10s., if by day, and £1, if by night; and 4s. each for every time of going afloat for exercise. The rewards for saving life are increased on special occasions when unusual risk or exposure has been incurred. Besides pecuniary rewards the Society also grants its Gold and Silver Medals and Thanks inscribed on Vellum for gallant deeds by Life-boats and other means in Saving Life from Wrecks on our coasts.

The Medal of the Institution is granted as a permanent honorary acknowledgment of brave services; and, considering the Royal and National character of the Society, its decoration, recognised as it is by the Government, is highly appreciated and coveted by men of all ranks and conditions of society, as the emblem of a noble act—that of saving human life. (Appendix, p. 174.)

The boats are expected, in accordance with the Life-boat Regulations, to go afloat once each quarter. If, as may happen in the summer months, rough weather does not occur, a crew may still with advantage be exercised in rowing together; and thus the sound and tight

condition of the boat herself, and perfectness of her gear and fittings ascertained.

At the end of each quarter the Local Committee have a meeting at which, amongst other business, the Quarterly Report of the exercise and present condition of the Life-boat Establishment is carefully considered, and afterwards forwarded to the Parent Institution.

The Report contains a note of the expenses of the Life-boat Establishment during the quarter, and answers to the following queries :—

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| <ol style="list-style-type: none">1. Date of exercising the Life-boat ?2. State of the Wind, Weather, and Sea ?3. How long was the Boat out on trial ? If the sea was heavy, how did she behave ?4. Was all the usual gear in the boat ?5. Had the Crew their Life-belts on ?6. State if any and what repairs are wanted, or defects to be made good, in the Boat, Carriage, House, or Gear, with an estimate of the cost ? | <ol style="list-style-type: none">7. Have the Crew been paid for exercising, four shillings each man. And the Coxswains their quarter's salaries, £2 10s. ?8. Are the Instructions for Restoring Suspended Animation, and the Life-boat Regulations, posted up in the Boat House ?9. Has the Ventilation of the Boat and Boat-house been carefully attended to during the Quarter ?10. Remarks, if any. |
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After the boat has been out on service a return is furnished to the Institution by the Local Honorary Secretary, giving the particulars of the case in answer to the following questions :—

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|--|--|
| <ol style="list-style-type: none">1. Name of Vessel, and where belonging to ?2. Name of Master, and of Owners ?3. Rig, Tonnage, Number of Crew, and Persons on board the Vessel ?4. Where from ? Where bound to ?5. What cargo ? or in Ballast ? | <ol style="list-style-type: none">6. Probable Value of Ship and Cargo ?7. Wind, Weather, and State of Sea ?8. Time of Day ? State of Tide ?9. Exact spot where Wrecked ?10. Number of Lives Saved ?11. Number of Lives Lost ? |
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- | | |
|--|--|
| 12. Supposed cause of Wreck ?
13. Was it a total Wreck, or Stranded, or Sunk ?
14. Time of Launching Life-boat ?
15. Time of reaching Wreck ?
16. Time of returning ashore ?
17. Did the Boat behave well ?
18. By whose authority was she ordered out ?
19. Was any Damage done to the Boat ? Extent of Repairs required ? | 20. State the Names of the Crew of the Life-boat on this occasion, and number of times these Men have been off in a Life-boat to a Wreck ; noting any special case of individual exertion.
21. Amount, if any, of Reward received locally or from elsewhere.
22. Amount, if any, of Salvage.
23. Remarks, &c. |
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A reward of 7*s.* is given to the man who first brings tidings of a Wreck at such a distance along the coast as not to be in sight of a Coastguard Station or other look-out.

Full instructions are given to the coxswain for the management of his boat and crew ; the boat is always to be kept on its carriage in the Boat House ; there are to be three keys to the Boat House, that the missing of any one may not cause delay ; the coxswain is to assemble his crew by flags during the day, and guns during the night ; he is to keep a watch on the weather and make partial preparations for usefulness whenever a storm seems brewing ; and he is to familiarise himself with the method for the recovery of persons apparently drowned, in case the boat brings ashore, as she sometimes does, a poor man more dead than alive. The Life-boat is never to interfere with private enterprises of the local boatmen, except in cases of emergency and at their desire.

On boarding Wrecks the preservation of life is the sole consideration. Should any goods or merchandise be brought into the Life-boat, contrary to the coxswain's remonstrance, his first business is to throw them overboard.

Life-boats, like everything else, wear out and have to be replaced by new ones. In such cases framed metal Tablets are put up in the Boat Houses recording fully the services of the previous Life-boat at the station, thus perpetuating local interest in the good work, and recording the munificence of the donors. The following is a copy of a recent tablet of this class:—

SOUTHPORT LIFE-BOAT STATION
OF THE
ROYAL NATIONAL LIFE-BOAT INSTITUTION.

The first Life-boat placed on this Station by the ROYAL NATIONAL LIFE-BOAT INSTITUTION was sent here in 1861. It was presented to the Institution by JAMES KNOWLES, Esq., of Eagley Bank, near Bolton, and was named the *Jessie Knowles*.

In 1873 that Life-boat was replaced by another, after having saved 75 lives from the following wrecked vessels.

	Lives saved.
20th October, 1862, Ship <i>Annie E. Hooper</i> , of Baltimore . .	4
20th September, 1863, Barque <i>St. Lawrence</i> , of Liverpool— saved vessel and crew	14
31st October, „ Barque <i>Tamworth</i> , of Skien, Norway . .	17
4th December, „ Ship <i>David White Clinton</i>	8
20th October, 1864, Sloop <i>Liver</i> , of Carnarvon	3
2nd February, 1867, Sloop <i>Perseverance</i> , of Liverpool	2
13th March, 1868, Ship <i>Nictaux</i> , of St. John's, N.B.— rendered assistance.	
8th August, 1869, Schooner <i>William Wallace</i> , of Dundalk saved vessel and crew	5
15th December, 1870, Schooner <i>Jessie</i> , of Gourock	5
26th August, 1871, Barque <i>Times</i> , of Liverpool	17
14th December, 1871, Barque <i>Marseille</i> —remained by vessel.	

Total lives saved 75

RICHARD LEWIS, *Secretary*,
ROYAL NATIONAL LIFE-BOAT
INSTITUTION,
John Street, Adelphi, London.
December, 1873.

RALPH BARTON, *Vice-Admiral*,
Hon. Sec. of the Southport Branch
of the Institution.

The NATIONAL LIFE-BOAT INSTITUTION has now 242

Life-boats under its management ; and it is a remarkable fact that every one of these Boats has been a gift to it. Some 17 years since a lady presented to the Institution the cost of a new Life-boat which was to be stationed at a part of the coast where most needed. Another Life-boat soon followed from a gentleman. A third was presented by a Yacht Club ; and a fourth was given by a lady, as a thank-offering after a providential preservation from drowning. Rapidly the generous spark fanned into a flame, and new boats as fast as they were required on various coasts of the United Kingdom were presented.

Many of these noble gifts assumed the shape of memorials to departed relatives or friends—the first of which was given by two surviving sisters, in memory of a departed one, and which boat bears the name of the *Sisters' Memorial*. Next came inland towns—Ipswich being the first—some of the inhabitants of which, feeling a desire that their own communities should be represented on the coast as performing their share of the national duty of affording succour to shipwrecked persons, in the only manner in which they could do so, appealed to their fellow-townsmen ; and soon many of such inland places were represented by their own boats, Manchester and our chief manufacturing towns and cities being conspicuous in the good work.

Again, various public bodies, such as the great Mutual Benefit Societies, the Civil Service, the Universities, Yacht Clubs, Commercial Travellers, Sunday Schools, and the subscribers to Public Journals, the Society of Friends, the Bristol Histrionic Club, and other Bodies, have come forward at different times, and strengthened the hands of the Institution by providing the funds for the purchase of Life-boats.

In addition to its Life-boat Work, and to the rewarding of persons who, by Shore-boats or other means are instrumental in Saving Life from Wrecks on our coasts, the Institution has done good service in other ways.

Thus it has published the well-known Instructions for the Restoration of the Apparently Drowned. They are based on the admirable directions of the late Dr. MARSHALL HALL, combined with those of Dr. H. R. SILVESTER, and are the result of most extensive inquiries instituted by the Society in 1863-4 amongst medical and scientific men both at home and abroad. These directions have been extensively circulated by the Society throughout the United Kingdom and in the Colonies. They are also in use in Her Majesty's Fleet, in the Coastguard Service, and at all the stations of the British Army throughout the world. (Appendix, p. 206.)

About the same period the Institution caused most searching inquiries to be made round our coast on the subject of the Management of Open Boats in Heavy Surfs and Broken Water. The result was embodied in instructions for the guidance of those having charge of such boats, which have been widely circulated, and their use is taught on board the Training Ships both of the Royal Navy and the Merchant Service. (Appendix, p. 164.)

Again, it has introduced an improved Safety Fishing Boat on the coast, by building such boats, provided with safety fittings, and placing them at selected stations with the view of inducing fishermen to construct their boats after that model. Thus it has helped to diminish the loss of life which so frequently occurred when fishermen were overtaken by gales of wind at long distances from the land; and it is manifest that the

experiment has been successful. The Inspecting Officers of the Institution, on recent tours of inspection to its Life-boat Stations on the north and east coasts of Scotland, observed that a large number of the fishing-boats on that part of the coast, both new and old, were now decked and fitted like the Safety Fishing Boats introduced by the Institution. (Appendix, p. 183.)

It has also supplied to many of its Life-boat Stations an efficient and trustworthy barometer, verified by Mr. GLAISHER at the Greenwich Royal Observatory. Attached to each barometer is a chart, on which the daily indications of the instrument are registered. By means of this diagram the boatmen and fishermen are enabled readily to observe the progressive rise and fall of the mercury. Thus a more prudent spirit has been fostered amongst those men, and it is gratifying to know that the instruments are highly appreciated on the coast. In several cases they have been the means of warning seafaring men of the coming storm, which would otherwise probably have overtaken them in mid-ocean, and proved their destruction. (Appendix, p. 191.)

The Institution has also never ceased to advocate the desirability of providing a better class of Life-boat for use on board ships—and has introduced a cheap and efficient Life-belt for the use of seamen. (Appendix, p. 162.)

Life-boat Societies have been organised on the principles of the NATIONAL LIFE-BOAT INSTITUTION of England, in France, Germany, Russia, Austria, Italy, Turkey, and other foreign countries—the Institution having rendered every possible assistance to the several Societies, which in some instances have had their Life-boats built by its own builders under the personal superintendence of its Officers. Great success has happily attended the formation of some of these Life-boat

Societies, many lives having been saved through the instrumentality of their Life-boats.

It may here be interesting to trace the gradual progress of the NATIONAL LIFE-BOAT INSTITUTION since its re-construction in 1850, which can easily be done on reference to the following tabular statement :—

Year.	Receipts.	No. of Life- boats.	No. of Lives Saved.
	£. s. d.		
1849-50	354 17 6	19	209
1850-1	758 1 3	19	470
1851-2	2,468 19 2	30	230
1852-3	703 3 11	34	773
1853-4	1,885 0 2	36	678
1854-5	1,744 19 4	50	355
1855	2,034 14 1	50	406
1856	4,983 14 8	58	473
1857	5,327 8 2	70	374
1858	7,802 13 0	81	427
1859	11,652 11 6	101	499
1860	14,027 11 2	110	455
1861	15,092 10 10	121	424
1862	14,825 5 5	124	574
1863	21,101 6 3	132	714
1864	31,917 9 8	144	698
1865	28,932 3 3	162	714
1866	41,718 1 4	173	921
1867	39,305 10 5	186	1086
1868	31,668 9 8	200	862
1869	40,409 15 3	220	1231
1870	25,711 16 4	228	784
1871	28,140 4 3	233	882
1872	27,331 14 4	233	739
1873	31,740 0 3	240	668

It has thus come to pass that, with the blessing of God and through the liberality of the British public, the Institution has contributed altogether up to the close of 1873, to the saving of 22,153 lives from Wrecks on our Coasts, either by its Life-boats or by other means, for which services it has granted 940 Gold and Silver

Medals, besides pecuniary rewards to the amount of over £42,000.

Through the splendid support, and generous appreciation of the nation, the Institution has now achieved a position which enables the members of its managing body to look with satisfaction on the retrospect of their labours, and entitles them to the gratification of feeling that the work which they had set their hand to do twenty-five years ago has been performed. That is to say, they have placed on every point on the coasts of the United Kingdom, where its services are likely to be required, and where it is possible to obtain a crew and local co-operation or supervision, the best Life-boat which man has been able as yet to invent.

It simply remains to keep this system in good working order, and to provide funds for maintaining the existing Life-boat Establishments in a state of completeness and efficiency. To do this, however—considering that the NATIONAL LIFE-BOAT INSTITUTION is solely dependent on voluntary support—the encouraging sympathy and interest, and the liberal pecuniary aid of their fellow-countrymen will still be required.

At the same time it is desirable to point out that the Institution is always ready to consider proposals to establish new Life-boat Stations which new developments of trade may render desirable. But it must be remembered that there are extensive lines of coast where, owing to the absence of trade, wrecks very rarely take place, and where, therefore, it would only be diverting money from more useful objects to establish Life-boats; whilst there are other localities at which, from the rocky or precipitous character of the shore, they could not be launched or hauled up in gales and heavy seas without

certain destruction, or where there are no competent boatmen to work them.

Still we must not lose sight of the melancholy fact that hundreds of lives are lost annually on and around our own shores alone, proclaiming solemnly though silently, that for humanity's sake, and for the national credit, no exertions should be spared in providing every possible means for the conveyance of succour to the shipwrecked.

Perhaps no human Institution of modern times can show such a rapid development or more splendid results. At its resuscitation in 1850, it had only a few comparatively inferior and ill-found Life-boats nominally in connection with it ; its Jubilee found it with *two hundred and forty-two* valuable and splendid boats, perfectly equipped, for the most part mounted on well-designed and admirably built Carriages for land-transport, kept in solidly constructed and durable Boat Houses, and manned by brave and practised crews.

As previously stated, the resources and energies of the Institution will no doubt in future have to be chiefly, if not solely, devoted to maintaining in a state of complete efficiency and constant readiness for service the magnificent Fleet which it now has under its management. But it must be remembered that Life-boats, and the various articles of their equipment, decay, and are constantly liable to injury, and that therefore a large annual income is absolutely needed to meet these contingencies, to reward the crews for their noble services, and to pay the salaries of the coxswains of the boats and the permanent expense of the quarterly exercise of their crews.

Another serious source of expense likewise arises from encroachment of the sea, which in some localities washes

away or injures slipways, roads cut through cliffs, and other approaches to the shore, thus cutting off the communication between the Life-boats and the sea, and which therefore require from time to time to be renewed or repaired, and occasionally even necessitate the removal of the boat-houses to safer or more favourable situations.

Accordingly the Life-boat Institution needs a large permanent income ; and the Committee feel assured it will never lack support so long as it maintains its Fleet in the state of thorough efficiency attained at the present time, manned as the boats of the Institution are on every emergency by as fearless and noble a class of men as ever our NELSONS and COLLINGWOODS led to battle to uphold our country's honour and glory.



APPENDIX.

APPENDIX.

ROYAL NATIONAL LIFE-BOAT INSTITUTION.

THE LIFE-BOAT REGULATIONS.

THE following Regulations are intended for the guidance of the Local Committee formed at each place at which a Life-boat is stationed by the NATIONAL LIFE-BOAT INSTITUTION, and to whose care and control the Life-boat, her crew, and everything connected with her management and maintenance are entrusted.

The Local Committee to consist, if practicable, of not less than five persons usually resident, to be elected annually. The Inspecting-Commander of Coastguard of the division, or, in his absence, the nearest Coastguard officer to the spot, to be invited to become a member of the Local Committee.

1. The Life-boat's crew to consist of a coxswain-superintendent, an assistant coxswain, a bowman, and as many boatmen in addition as the boat pulls oars. On service a bowman should always go in the boat; but he is not required on occasions of exercise.

2. For every boat, at least double the number of men required (if they can be found at or near the spot) should be invited to become members of her crew.

3. Such men to consist of fishermen or other boatmen who are usually resident, and (with permission of the Admiralty) of any Coastguard men of the station who may volunteer for the service.

4. The salary of the coxswain-superintendent shall be 8*l.*, and that of the assistant coxswain 2*l.* annually. On every occasion of going afloat to save life, the coxswains and each of the crew shall receive alike from the Parent Institution, 10*s.* by day and 1*l.* by night; and for every time of going afloat for exercise, 4*s.* The Committee, however, reserve to themselves the power to add to those amounts on any special occasions, when unusual risk or exposure has been incurred.* In the absence of the coxswain, the assistant coxswain will take charge of the boat.

5. In the event of money being received by the Life-boat for salvage of

* The Committee reserve to themselves the power to modify or withhold the usual payment in cases where the launching of Life-boats was manifestly unnecessary before they were put afloat.

property, or similar service, a proportion equal to the shares of two of the crew shall be paid to the Institution to cover risk of damage to the boat, the remainder being equally shared amongst the coxswain and crew.*

6. If voluntary local subscriptions or other payments be raised, or made, to reward any special act of gallantry or exertion, the Institution recommends that the whole of the money be paid to the crew, in equal shares.†

7. As at each Life-boat Station there will be a Local Committee, the coxswain will act under their immediate directions, and the boat, except in case of wreck, or other disaster, is never to be taken afloat without their sanction.‡

8. As the efficiency of a Life-boat may often depend on the good training and discipline of her crew, the strictest attention must be paid by them to the directions of the coxswain on all occasions connected with the service. The boat shall be taken afloat for exercise, fully manned, once during each quarter, sometimes in *rough weather*, unless the boat has been out in that quarter, either on service or with one of the Inspectors.

9. The Local Committee at each station are requested to meet at the expiration of each quarter, and then to forward the usual Quarterly Report to the Institution, on the printed sheet provided for the purpose, as to the behaviour of the boat during exercise, &c., pointing out any defects that may require to be remedied, and offering any suggestions that may conduce to the efficiency of the service. Also generally to report on the state and condition of the Boat, the Carriage, the Boat House, and all the Life-boat gear. Should occasion for immediate repairs arise, the Local Committee are authorized to make them to the extent of 5*l.* : more extensive repairs to be referred, with an estimate, to the Parent Institution.

10. The boat is to be kept on her Carriage in the Boat House, with all her gear in her ready for use, except articles which may require to be secured from damp, and the lantern, which is only required for night service, and has first to be trimmed.

11. There should be three keys to the Boat House, kept in different places, with the *address of each painted on the door* ; one in possession of the coxswain, and the others as the Local Committee may decide.

12. Immediately on intimation of a wreck, or of a vessel in distress, the coxswain is to use his utmost exertions to assemble his crew, launch the boat, and proceed to her assistance : and in the event of a sufficient number of his crew not being present, he is to select the best volunteers he can get to supply their places.§

13. If a wreck occur at some distance from the station, so as to require

* All claims on the owners of vessels for saving their property to be made in their own names by the coxswains and crews of Life-boats, to whom the Life-boats are lent for such service, and on no account in the name of the Institution.

† The coxswains and crews of Life-boats are strictly prohibited from making any claim on owners of vessels or others for saving life.

‡ It is desirable that each Local Committee should appoint one of their members, resident on the spot, to specially represent them, in conjunction with the Honorary Secretary, on occasions of wrecks.

§ The coxswain is held responsible for every man who goes into the Life-boat on occasions of service and of quarterly exercise without having on a life-belt.

the boat to be transported along the coast, the coxswain is to send to procure sufficient horses (which, by the Wreck and Salvage Act, any magistrate, constable, or revenue officer may demand the use of), attach them to the carriage, and lose no time in making the best of his way with the crew to the scene of the wreck.

14. A reward of 7s. to be given to the man who first brings intelligence of a wreck at such a distance along the coast as not to be in sight from the Coastguard or other look-out.

15. A signal shall be agreed on by which the Life-boat crew can be called together when required, such as a flag hoisted by day, and the firing of a carronade (or other alarm signal) twice, quick, by night.

16. On approaching a wreck, the coxswain will use his judgment, according to the circumstances of the case, whether he will board the wreck end on, either on the bow, on the quarter, or on the broadside; or whether he will go to windward, drop his anchor, and veer down to the wreck; or if he will lay her alongside.

17. On boarding wrecks, the preservation of life is to be the coxswain's sole consideration, and he is on no account to take in goods or merchandize which might endanger the safety of his boat, and the lives of those intrusted to his charge. And should any be brought in, contrary to his remonstrance, he is fully authorized to throw them overboard.

18. No one besides the coxswains and crew is to be allowed to go out in the Life-boat when going to a wreck, except with the express sanction of the Local Committee; and on no account is any one to go in the boat without having on a life-belt.

19. The Life-boat is not to be used for taking off an anchor; nor for the purpose of salvage; nor for taking off stores, a pilot, or orders to a ship, *so as to interfere with private enterprise*, except in cases of emergency, when valuable property would be lost without such aid, but to be reserved for cases involving risk of life.

20. An entry is to be made, in the journal supplied for the purpose, of the particulars of all services performed by the Life-boat in saving or attempting to save life, being a duplicate of the official Reports of the same forwarded to the Institution, which journal will be retained at the station as a complete record of all the services which have been performed by the Life-boat.

21. On returning from service, the boat is not to be left in the surf on the beach, but, as soon as possible, is to be got on her carriage, and placed in the Boat House.

22. The coxswain-superintendent will be held responsible for the efficiency and general good order of the Boat House, the Boat, and her gear; and it is hoped that a sense of the trust confided to them in the cause of humanity will lead the coxswains and crews to be most careful on these points, and to distinguish themselves by their zeal and readiness, and by the seaman-like manner in which their boats are handled.

SAILING IN SELF-RIGHTING LIFE-BOATS.

SOME of the Institution's Life-boats having upset, when under sail, the Committee think it necessary to remind the coxswains and crews of the self-righting Life-boats, that, as their boats are constructed both to row and sail, and are also of light draught to enable them to be launched from flat shores, it is not practicable to give them either sufficient ballast or sufficient width to enable them to carry very large sails.

They should not, therefore, be overpressed with canvas, nor should the sheets be ever belayed. It should likewise be borne in mind that no boat will sail better with her gunwale under water than on a more even keel, and, at the same time, that stability is necessarily much diminished when there is a large body of water within a boat, settled on one side.

TOWING LIFE-BOATS.

1. ON no account is any Life-boat belonging to the NATIONAL LIFE-BOAT INSTITUTION to be towed, either by a steamer or sailing-vessel, without her crew being in her, or at least a sufficient number of men to manage her, in the event of her breaking adrift, or having to cast off from the towing-vessel.

2. A Life-boat may be towed by either one or two tow-ropes. If the former be adopted, it is recommended to tow with a long scope, from forty to sixty fathoms, the tow-rope being rove through a fair-leader or lizard at the stem-head, and secured to a bollard shipped in the trunk or tabernacle of the foremast.

If towed with two ropes, one from each quarter of the towing-steamer, they should not be taken to the stem of the boat, but be made fast, one to each bow; for which purpose the Life-boats are fitted with a large ring, or belaying pin, on each bow. In either case the crew should be seated well aft in the boat to weight her by the stern, excepting one man forward with a small hatchet by him, ready to cut the tow-rope in a moment if it should become necessary.

The Liverpool Life-boats, which are very frequently taken in tow, always use a single tow-rope, and in a heavy sea tow with a long rope, sometimes as much as sixty fathoms. They are always towed with their crews on board, who sit well aft to weight them at the stern. When towed by a paddle-steamer, they usually sheer off and tow well on the quarter, so as to be out of the wash of the paddle-wheels.

3. A Life-boat will always be found to tow better against a heavy head-sea than away from one, as there will be a more steady and regular strain

on her, and she will tow less wildly, and therefore with less violent jerks and strain on the tow-rope.

The Liverpool coxswains, in reply to queries put to them on the subject some years since by the Marine Surveyor to the Mersey Dock Board, stated that, in a long, heavy sea, they considered a boat more safe in tow than under sail ; but in a short sea with irregular break, as at the meeting of currents or on the edge of banks, the contrary. They also consider it safer to tow against a heavy sea than before a running one.

The danger when towing a Life-boat before a heavy sea may be much lessened by towing a drogue astern of the boat, to prevent her running ahead in front of a sea (at risk of damage against towing-vessel), and to keep up a more equable strain on the tow-rope.



SIGNALS FOR LIFE-BOAT STATIONS.

THE want having been often felt of some general system of signals for intercommunication, on occasions of Shipwreck, between Life-boat Stations when within signal distance of each other, the Committee have caused the following simple plan to be prepared, and have supplied various Stations of the Society with the necessary rockets, signal-lights, flags, and flag-posts, for carrying the same into effect.

It will be readily conceived that the circumstances attending Shipwrecks and Life-boat service are such as to make any complicated or extended system of signals for use on such occasions altogether impracticable, and that the extremest brevity and simplicity are indispensable.

In preparing this sheet of signals, that fact has been borne in mind, and no more has been attempted than is absolutely necessary, or than can be readily practised by the Life-boat crews on our coasts.

A circular letter was sent to each Life-boat Station with the signals, having the following description of them and the means for making them :—

“To enable the accompanying system of signals to be carried into effect, you will in a few days receive a Tin Box, containing 12 Red and 12 Green Meteor Rockets, 12 Red and 12 Green patent hand Signal-lights (with 2 dischargers for igniting them by percussion), and 6 common fuseses or port-fires.

“Also a bundle of staves for the rockets, a portable tripod stand from which to fire them, and two red flags, one for use ashore, the other for the boat, to be always kept in her.

“The Rockets burst with a Red or Green Star, which remains alight for about 15 or 20 seconds. In discharging them, the thick-pointed end of the staff must be pushed hard into or through the socket at the side of the rocket to prevent the latter leaving the staff and spoiling its flight. They should be thrown up perpendicularly.

“The Hand-lights ignite by a blow at the end of the discharging handle, which drives a wire needle into them. They will burn for about three-quarters of a minute.

“The Portfires have to be lit with a common match or fusee, and will burn about 15 minutes.

“The Rockets and Hand-lights will be painted the same colour as that which they exhibit when ignited, so that they may be readily distinguished when required for use.

“There are two dischargers sent, so that one can be used in the boat, and the other on the shore.

"The Tin Box should be kept in a dry spot, in the loft, and one of the keys might be hung up there, and the other at the coxswain's house.

"*To the Honorary Secretary of the*
"*Branch.*"

The following are the signals adopted with a view to give information to neighbouring Life-boat Stations when they are within short distances of each other, and also to Vessels in distress.

PRELIMINARY—

RED to signify a danger seen requiring help. GREEN to signify that help was about to be, or has been, afforded.

NIGHT SERVICE—

1. On a vessel being seen on shore or in danger, or signals of distress from any vessel being observed, or on Rockets being thrown up from any light-ship, two Rockets, bursting with a Red Star, to be thrown up at two or three minutes' interval at a Life-boat Station. To be answered by a Red-star Rocket from adjoining Stations as soon as observed.

This signal would serve the double purpose of informing the adjoining Life-boat Stations that the danger was seen, and the Life-boat about to be launched, and of intimating to the crew of the endangered vessel that help was preparing for them.

2. As soon as the Life-boat has been launched, a Rocket bursting with a Green Star to be thrown up.

This signal would inform the adjoining Life-boat Stations that the Life-boat was on its way to the wreck.

3. On arriving near the distressed vessel, a Red Percussion Hand-light to be displayed by the Life-boat.

This would show to the Life-boat Stations on shore that the Life-boat had arrived at the vessel, and would likewise inform those in distress that *help was close at hand*.

4. If in consequence of there being a larger number of persons in the vessel than could be taken into the Life-boat, or of any accident to the latter, further aid should be required, then the Life-boat to continue to burn Red Hand-lights, at short intervals, until answered from the shore by a Red Hand-light or Red-star Rocket.

5. On the safe arrival of a Life-boat with the whole or part of a wrecked crew on shore, a Green Hand-light, or Green-star Rocket, to be shown at the station or at the place of landing.

This would inform the adjoining Life-boat Stations that the whole or part of the Shipwrecked men had been safely landed.

DAY SERVICE—

A Red Flag to be substituted for the Red Light and Red-star Rockets, and a Whift for Green Lights and Green-star Rockets.

NOTE.—Rockets are not sent to all stations, but only to those where ~~they~~ are considered to be necessary.

SIGNALS OF DISTRESS.

Required to be used and displayed on and after the 1st November, 1873, in accordance with the 18th section of the Merchant Shipping Act, 1873.

"In the Day-time.—The following signals, numbered 1, 2, and 3, when used or displayed together or separately, shall be deemed to be signals of distress in the day-time :—

"1. A gun fired at intervals of about a minute.

"2. The International Code signal of distress indicated by N.C.*

"3. The distant signal consisting of a square flag, having either above or below it a ball, or anything resembling a ball.

"The following signals, numbered 1, 2, and 3, when used or displayed together or separately, shall be deemed to be signals of distress at night :—

"1. A gun fired at intervals of about a minute.

"2. Flames on the ship (as from a burning tar barrel, oil barrel, &c.).

"3. Rockets or shells of any colour or description fired one at a time at short intervals."

And "Any Master of a vessel who uses or displays, or causes or permits any person under his authority to use or display, any of the said signals, except in the case of a vessel being in distress, shall be liable to pay COMPENSATION for any labour undertaken, risk incurred, or loss sustained, in consequence of such signal having been supposed to be a signal of distress ; and such compensation may, without prejudice to any other remedy, be recovered in the same manner in which salvage is recoverable."

SIGNALS FOR PILOTS.

Required to be used and displayed on and after the 1st November, 1873, in accordance with the 19th section of the Merchant Shipping Act, 1873, if a vessel requires the services of a Pilot.

"In the Day-time.—The following signals, numbered 1 and 2, when used or displayed together or separately, shall be deemed to be signals for a pilot in the day-time :—

"1. To be hoisted at the fore, the jack or other national colour usually

* This consists of a blue and white "chequered" square flag, hoisted over a burgee showing a red ball on a white ground.

worn by merchant ships, having round it a white border, one-fifth of the breadth of the flag ; or

“ 2. The International Code pilotage signal indicated by P.T.*

“ *At Night.*—The following signals, numbered 1 and 2, when used or displayed together or separately, shall be deemed to be signals for a pilot at night :—

“ 1. The pyrotechnic light, commonly known as a blue light, every fifteen minutes ; or

“ 2. A bright white light, flashed or shown at short or frequent intervals, just above the bulwarks, for about a minute at a time.”

And “ Any master of a vessel who uses or displays, or causes or permits any person under his authority to use or display, any of the said signals for any other purpose than that of summoning a pilot, or uses or causes or permits any person under his authority to use any other signal for a pilot, shall incur a PENALTY not exceeding twenty pounds.”

* This is a square blue flag, having in its centre a white square, hoisted over a flag of a similar shape—the latter showing three vertical bars, colored red, white, and blue.



SALVAGE OF PROPERTY BY LIFE-BOATS.

THE coxswains and crews of the Life-boats belonging to the NATIONAL LIFE-BOAT INSTITUTION will be guided by the following Rules in all cases when they use the Life-boats to assist in saving vessels or other property :—

In accordance with the 19th section of the Life-boat Regulations, the Life-boats of the Institution are not, as a general rule, to be employed to save property, so as to interfere with private enterprise. When, however, other aid is not available, their crews are at liberty to use them on the following conditions :—

1st. On all occasions when used to save vessels or property, their crews will consider that they are lent to them for that purpose, and will look to be paid for the same by the owners of the property saved, and not by the Institution.

2nd. They are never to be launched expressly to perform such service, when lives are not endangered, without the sanction of the Honorary Secretary or other representative of the Local Committee of Management. When, however, a Life-boat has been launched to save life, and on reaching a wrecked vessel, it is thought that the latter may be also saved with the aid of the Life-boat's crew, the coxswain will use his own discretion in allowing his crew to afford such aid or not.

3rd. The greatest care must be taken of the boats, and they are never, on such occasions, to be exposed to serious risk of damage or destruction.

4th. Their crews are not to make exorbitant demands from the owners of property saved.

5th. To cover risk of damage to the boats, two shares of all salvage payments received—that is, a sum equal to the shares of two men of the crew—to be paid to the Institution.

All claims on the owners of vessels for saving their property must be made by the coxswains and crews of Life-boats, to whom the Life-boats are lent for such extra service, and on no account is the claim to be made in the name of the Institution.

In those cases when vessels and their crews are saved by the Life-boats, and when the salvage payments made by the owners are less in amount than the usual award of the Institution for saving lives, the Institution will make up the deficiency to the Life-boat men.

SERVICES OF LIFE-BOATS TO DISTRESSED VESSELS.

As it often happens that the Life-boats of the NATIONAL LIFE-BOAT INSTITUTION are called on to aid in saving vessels and their cargoes from

destruction, whilst the owners of such property have not unfrequently objected to paying the Life-boat men for their services (believing that they are only performing their duty by rendering them aid), it is thought desirable that the owners of ships and merchandise should be made acquainted with the principles by which the Institution is actuated in the matter of saving *wrecked property*, and the terms on which it allows its boats to be used in saving it.

In the first place then, it cannot be too plainly stated or too generally known that the NATIONAL LIFE-BOAT INSTITUTION is a Society established for the *saving of human lives*, and that only. It appeals to the British public to support it for that object, and that object alone. It has, therefore, no right to devote any part of the funds so raised to providing means for saving property, or for any other object than the philanthropic one which is its especial vocation.

Accordingly, it is a misapprehension on the part of the owners of property at sea to suppose that it is the duty of the men who work the Institution's Life-boats on the coast, to give their services gratuitously to effect its preservation. The Institution pays them for devoting their time and labour, and for risking their lives, to save the lives of others, and it has no claim on them to do more.

On the other hand, however, it is felt that, in the interests of humanity; valuable property which has been produced by the "sweat of man's brow" should not be allowed to perish beneath the waves, if it can be saved. The Institution, therefore, authorizes the crews of its Life-boats to assist in saving vessels stranded, or leaky, or otherwise in distress, under special circumstances and on certain terms. In permitting those services, and in arranging those terms, a general principle had to be decided on, and such service being altogether distinct from the function of the Institution, it was considered expedient to separate it, as far as possible, from the more legitimate employment of its boats; to effect which it was arranged that, on all occasions of using the Institution's Life-boats to save property, they were to be considered as lent to their crews for that purpose, and that the latter should look to the owners of the property to remunerate them, in accordance with the provisions of the "Merchant Shipping Act," and not to the Institution.

The conditions on which the Life-boats are lent to their crews for such service are as follows :—

1st. That they are on no account to be used in the salvage of property so as to interfere with private enterprise, when any other boats are available, and can be safely employed.

2nd. That they are never to be launched and taken afloat expressly to perform such service, when lives are not endangered, without the sanction of the Local Honorary Secretary, or other representative of the Local Committee of Management.

3rd. That the greatest care is to be taken of them, and that they are never, on such occasions, to be unnecessarily exposed to serious risk of damage or destruction.

4th. That their crews are not to make exorbitant demands for payment from the owners of the property saved in proportion to the service rendered.

5th. That to cover risk of damage to the boats two shares of all salvage payments received, *i. e.* an equivalent to the shares of two of the crew, shall be paid to the Institution.

The utility of the first three of the above conditions will be obvious, and need not be further commented on; the two last call for some observations:—

With regard to the fourth, it is hardly possible that any rule which could be devised would altogether prevent disputes arising between crews of Life-boats and the owners of property saved by them, since different elements have to be considered in determining the amount of the payment to which the salvors of property are fairly entitled, *viz.*: 1. The value of the property saved. 2. The certainty of its loss, or the degree of risk of loss to which it would have been exposed, but for the salvors' aid. 3. The amount of time and labour expended, and the difficulty, exposure to wet and cold, or risk of life incurred by the salvors. It is evident, therefore, that the character and value of such services must be of the most varied character; and that the owners of property saved, and the salvors, whose interests lie in opposite directions, will be likely to form very different estimates of their value. The Legislature, sensible of the difficulties surrounding such cases, has, by the "Merchant Shipping Act of 1854," only stated that the salvors of property from loss at sea shall be entitled to "reasonable compensation," but it has made ample provision for settling all points in dispute. 1. By empowering the "receivers of wreck" to arbitrate between the salvors and owners of property, with the mutual consent of each party. 2. By authorizing any two magistrates of the locality to fix the amount of payment in cases under 200*l.*, where the parties cannot come to a mutual agreement. 3. By admitting appeal to the "High Court of Admiralty," in cases above 200*l.* in amount of demand, and in all cases, when the contending parties, or either of them, are not satisfied with the decision of the local magistrates. And, 4. By ultimate appeal to the Privy Council.

All, therefore, that the Institution can do in the interest of the shipowner or owner of cargo, in such cases, in addition to allowing the use of its boats, is to urge its crews not to make "exorbitant demands" on owners for payment, it having no power to remove such cases from the legal jurisdiction of the country. It should also be remembered that the crews of the Institution's Life-boats are not a body of enrolled men, retained by permanent wages, but that they are formed from volunteers of the local fishermen or other boatmen, and in some instances of Coastguard men, who are only employed for the occasion, and paid "for saving or endeavouring to save human life," and for that only.

The 5th condition, *viz.*, the payment of two shares of all salvage receipts to the Institution, calls for some explanation, as it is liable to be misunderstood. It may, then, be distinctly stated that it is not imposed as a source

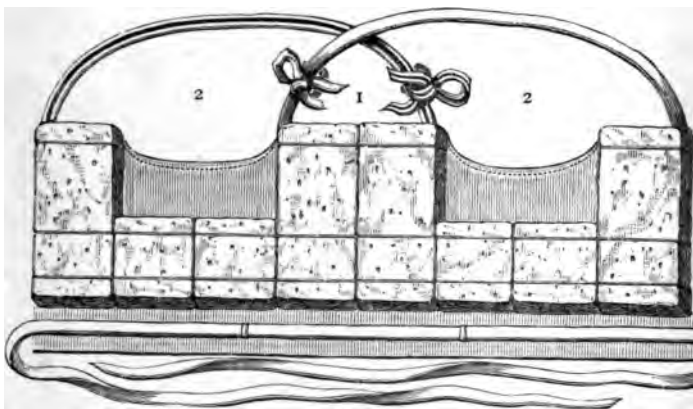
of profit to the Institution ; the first intention, as already implied, being to cover risk of damage, since without such equivalent it is not considered that the Institution would be justified in allowing its boats to be put to a use so distinct from that for which its supporters have provided them ; whilst a second desirable effect of this condition is, that the boatmen are thereby induced to use their own boats, in preference to the Life-boats, for the salvage of property, whenever it is practicable to do so, since they have then no deduction made from the salvage awards which they may earn.

It is considered that such an arrangement cannot but be beneficial to all parties :—the owners or insurers of a valuable ship and cargo are fortunate in having their property saved at a small percentage—the crew of the Life-boat, always poor men, receive a handsome payment, calculated to increase their attachment to the Life-boat service—whilst the Institution obtains a sufficient amount to cover risk of damage to its boat.

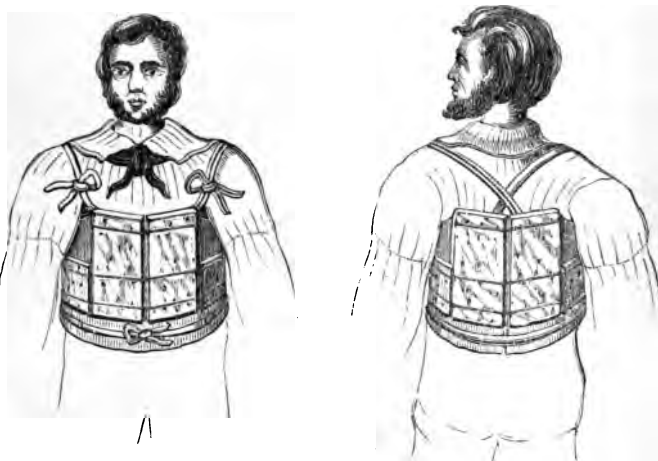
The coxwains and crews of the Life-boats of the Institution are strictly prohibited from making any claim upon owners of vessels, or others, for saving life—as the Institution alone pays for such services.

This Memorandum has been prepared, by the direction of the Committee, for the information of the owners of ships and cargoes.



CAPTAIN WARD'S CORK LIFE-BELT FOR SHIPS' CREWS.

VIEW OF LIFE-BELT, WITH THE SHOULDER-STRINGS TIED AS WORN.



LIFE-BELT AS WORN—FRONT AND BACK VIEW.

As it is important that the belts should be kept together, and protected from the weather, yet be at all times accessible, they should be kept in a chest, stowed and lashed on the upper deck, each belt with the upper or shoulder-strings ready tied in a half-bow, so that it can be put quickly on, over the head, without untying, the belts being occasionally examined and exposed to the air in dry weather, and the crew being shown the manner of putting them on. To put them on without untying, the head should be put through the central opening (1), and the arms through the side openings (2). The lower or waist-strings are then brought round from behind, and tied in front. The shoulder-strings, it will be observed, cross behind, like trouser-braces : they should be drawn tightly over the shoulders, so as to keep the belt close up under the arms, and being tied close to the breast-corks in front, they can be readily pulled up tighter and re-tied at pleasure. They will not interfere with the free use of the arms either in rowing or swimming.

TO SHIPOWNERS AND MASTER MARINERS.

NOTICE is hereby given,—

That the ROYAL NATIONAL LIFE-BOAT INSTITUTION, with a view to assist in saving the lives of our merchant seamen under circumstances of Shipwreck when they cannot be rescued by means provided on the shore, is prepared to supply chests of efficient cork life-belts, at a very low price, on board merchant vessels.

The value of these simple and inexpensive instruments has been proved in too many cases to need any argument in their favour ; and no doubt is entertained that their general adoption in our merchant vessels would be the means of saving many valuable lives.

Applications to be supplied with chests of life-belts to be made to the Institution, through the Collectors of Customs, Shipping Masters, and Superintendents of Sailors' Homes at the several ports to which the vessels belong, or from which they sail ; the Honorary Secretaries of the Branches of the Institution ; or direct to the wholesale manufacturers, Messrs. J. & A. W. BIRT, 4, Dock Street, London Docks, London, E.

Sample chests of two sizes may be seen at some of the principal Custom Houses, Shipping Offices, and Sailors' Homes of the United Kingdom.

The smaller chests contain six belts ; the largest ones twelve. The cost of these belts is 5s. each, when bought in chests, or in any number above six ; and that of a single belt, 6s.

The belts are of two sizes, and are distinguished by the colour of the shoulder-strings.

The price of the chests *alone* varies from 15s. to 21s.

By Order of the Committee.

ROYAL NATIONAL LIFE-BOAT INSTITUTION,
London, John Street, Adelphi.

**ON THE MANAGEMENT OF OPEN ROWING-BOATS IN A SURF;
BEACHING THEM, &c.**

THE NATIONAL LIFE-BOAT INSTITUTION, some time since, collected information from 128 different places on the coasts of the United Kingdom regarding the system of management of boats in a surf and broken water pursued by fishermen and other coast boatmen.

It has appeared to the Committee of the Institution that the information obtained in this manner and in other ways may with advantage be published and circulated, for the guidance of those who may have insufficient experience in the management of boats under such circumstances.

Rules for the management of boats in a surf and broken water naturally fall under two heads, viz.—1st. Their management when proceeding from the shore to seaward against the direction of the surf. 2nd. Their management under the opposite circumstances of running for the shore before broken sea.

Before stating the course to be pursued under each head, we may remark that it is an axiom almost universally acknowledged, that there is, as a general rule, far more danger when running for the shore before a broke sea, than when being propelled against it on going from the land; the danger consisting in the liability of a boat to broach-to and upset, either by running her bow under water, or by her being thrown on her beam-end; and overturned broadside on.

RULES OF MANAGEMENT.

I. IN ROWING TO SEAWARD.

As a general rule, speed must be given to a boat rowing against a heavy surf. Indeed, under some circumstances, her safety will depend on the utmost possible speed being attained on meeting a sea. For if the sea be really heavy, and the wind blowing a hard on-shore gale, it can only be by the utmost exertions of the crew that any headway can be made. The great danger then is, that an approaching heavy sea may carry the boat away on its front, and turn it broadside on, or up-end it, either effect being immediately fatal. A boat's only chance in such a case, is to obtain such way as shall enable her to pass, end on, through the crest of the sea, and leave it as soon as possible behind her. Of course if there be a rather heavy surf, but no wind, or the wind off shore, and opposed to the surf as is often the case, a boat might be propelled so rapidly through it, that her bow would fall more suddenly and heavily after topping the sea, than if her way

had been checked ; and it may therefore only be when the sea is of such magnitude, and the boat of such a character, that there may be chance of the former carrying her back before it, that full speed should be given to her.

It may also happen that, by careful management under such circumstances, a boat may be made to avoid the sea, so that each wave may break ahead of her, which may be the only chance of safety in a small boat ; but if the shore be flat, and the broken water extend to a great distance from it, this will often be impossible.

The following general rules for rowing to seaward may therefore be relied on :—

1. If sufficient command can be kept over a boat by the skill of those on board her, avoid or “dodge” the sea if possible, so as not to meet it at the moment of its breaking or curling over.
2. Against a head gale and heavy surf, get all possible speed on a boat on the approach of every sea which cannot be avoided.
3. If more speed can be given to a boat than is sufficient to prevent her being carried back by a surf, her way may be checked on its approach, which will give her an easier passage over it.

II. ON RUNNING BEFORE A BROKEN SEA, OR SURF, TO THE SHORE.

The one great danger, when running before a broken sea, is that of *broaching-to*. To that peculiar effect of the sea so frequently destructive of human life, the utmost attention must be directed.

The cause of a boat's *broaching-to* when running before a broken sea or surf is, that her own motion being in the same direction as that of the sea, whether it be given by the force of oars or sails, or by the force of the sea itself, she opposes no resistance to it, but is carried before it. Thus if a boat be running with her bow to the shore, and her stern to the sea, the first effect of a surf or roller, on its overtaking her, is to throw up the stern, and as a consequence to depress the bow ; if she then has sufficient inertia (which will be proportional to weight) to allow the sea to pass her, she will in succession pass through the descending, the horizontal, and the ascending positions, as the crest of the wave passes successively her stern, her midships, and her bow; in the reverse order in which the same positions occur to a boat propelled to seaward against a surf. This may be defined as the safe mode of running before a broken sea.

But if a boat, on being overtaken by a heavy surf, has not sufficient inertia to allow it to pass her, the first of the three positions above enumerated alone occurs—her stern is raised high in the air, and the wave carries the boat before it, on its front, or unsafe side, sometimes with frightful velocity, the bow all the time deeply immersed in the hollow of the sea, where the water, stationary or comparatively so, offers a resistance, whilst the crest of the sea, having the actual motion which causes it to break, forces onward the stern, or rear end of the boat. A boat will in this position sometimes, aided by careful oar-steerage, run a considerable

distance until the wave has broken and expended itself. But it will often happen, that if the bow be low, it will be driven under water, when the buoyancy being lost forward, whilst the sea presses on the stern, the boat will be thrown (as it is termed) end over end ; or if the bow be high, or it be protected, as in most Life-boats, by a bow air-chamber, so that it does not become submerged, that the resistance forward, acting on one bow, will slightly turn the boat's head, and the force of the surf being transferred to the opposite quarter, she will in a moment be turned round broadside by the sea and be thrown by it on her beam-ends, or altogether capsized. It is in this manner that most boats are upset in a surf, especially on flat coasts, and in this way many lives are annually lost amongst merchant seamen when attempting to land, after being compelled to desert their vessels.

Hence it follows that the management of a boat, when landing through a heavy surf, must as far as possible be assimilated to that when proceeding to seaward against one, at least so far as to stop her progress shoreward at the moment of being overtaken by a heavy sea, and thus enabling it to pass her. There are different ways of effecting this object :—

1. By turning a boat's head to the sea before entering the broken water, and then backing in stern foremost, pulling a few strokes ahead to meet each heavy sea, and then again backing astern. If a sea be really heavy and a boat small, this plan will be generally the safest, as a boat can be kept more under command when the full force of the oars can be used against a heavy surf, than by backing them only.

2. If rowing to shore with the stern to seaward, by backing all the oars on the approach of a heavy sea, and rowing ahead again as soon as it has passed to the bow of the boat, thus rowing in on the back of the wave ; or, as is practised in some Life-boats, placing the after-oarsmen, with their faces forward, and making them row back at each sea on its approach.

3. If rowed in bow foremost, by towing astern a pig of ballast or large stone, or a large basket, or a canvas bag termed a "drogue" or drag, made for the purpose, the object of each being to hold the boat's stern back, and prevent her being turned broadside to the sea or broaching-to.

Drogues are in common use by the boatmen on the Norfolk coast ; they are conical-shaped bags of about the same form and proportionate length and breadth as a candle extinguisher, about two feet wide at the mouth, and four and a half feet long. They are towed with the mouth foremost by a stout rope, a small line, termed a tripping-line, being fast to the apex or pointed end. When towed with the mouth foremost, they fill with water, and offer a considerable resistance, thereby holding back the stern ; by letting go the stouter rope and retaining the smaller line, their position is reversed, when they collapse, and can be readily hauled into the boat.

Drogues are chiefly used in sailing-boats, when they both serve to check a boat's way and to keep her end on to the sea. They are, however, a great source of safety in rowing-boats, and the rowing Life-boats of the NATIONAL LIFE-BOAT INSTITUTION are now all provided with them.

A boat's sail bent to a yard and towed astern loosed, the yard being

attached to a line capable of being veered, hauled, or let go, will act in some measure as a drogue, and will tend much to break the force of the sea immediately astern of the boat.

Heavy weights should be kept out of the extreme ends of a boat ; but when rowing before a heavy sea the best trim is deepest by the stern, which prevents the stern being readily thrown on one side by the sea.

A boat should be steered by an oar over the stern, or on one quarter when running before a sea, as the rudder will then at times be of no use. If the rudder be shipped, it should be kept amidships on a sea breaking over the stern.

The following general rules may therefore be depended on when running before, or attempting to land, through a heavy surf or broken water :—

1. As far as possible avoid each sea by placing the boat where the sea will break ahead or astern of her.

2. If the sea be very heavy, or if the boat be very small, and especially if she have a square stern, bring her bow round to seaward and back her in, rowing ahead against each heavy surf that cannot be avoided sufficiently to allow it to pass the boat.

3. If it be considered safe to proceed to the shore bow foremost, back the oars against each sea on its approach, so as to stop the boat's way through the water as far as possible, and if there is a drogue, or any other instrument in the boat which may be used as one, tow it astern to aid in keeping the boat end on to the sea, which is the chief object in view.

4. Bring the principal weights in the boat towards the end that is to seaward, but not to the extreme end.

5. If a boat, worked by both sails and oars, be running under sail for the land through a heavy sea, her crew should, under all circumstances, unless the beach be quite steep, take down her masts and sails before entering the broken water, and take her to land under oars alone, as above described. If she have sails only, her sails should be much reduced, a half-lowered foresail or other small headsail being sufficient.

III. BEACHING OR LANDING THROUGH A SURF.

The running before a surf or broken sea, and the beaching or landing of a boat, are two distinct operations : the management of boats as above recommended, has exclusive reference to running before a surf where the shore is so flat that the broken water extends to some distance from the beach. Thus on a very steep beach, the first heavy fall of broken water will be on the beach itself, whilst on some very flat shores there will be broken water as far as the eye can reach, sometimes extending to even four or five miles from the land. The outermost line of broken water, on a flat shore, where the waves break in three and four fathoms water, is the heaviest, and therefore the most dangerous, and when it has been passed through in safety, the danger lessens as the water shoals, until, on nearing the land, its force is spent and its power harmless. As the character of the sea is quite different on steep and flat shores, so is the customary management

of boats on landing different in the two situations. On the flat shore, whether a boat be run or backed in, she is kept straight before or end on to the sea until she is fairly aground, when each surf takes her farther in as it overtakes her, aided by the crew, who will then generally jump out to lighten her, and drag her in by her sides. As above stated, sail will in this case have been previously taken in if set, and the boat will have been rowed or backed in by oars alone.

On the other hand, on the *steep* beach it is the general practice, in a boat of any size, to retain speed right on to the beach, and in the act of landing, whether under oars or sail, to turn the boat's bow half round towards the direction from which the surf is running, so that she may be thrown on her broadside up the beach, where abundance of help is usually at hand to haul her as quickly as possible out of the reach of the sea. In such situations, we believe, it is nowhere the practice to back a boat in stern foremost under oars, but to row in under full speed as above described.

IV. BOARDING A WRECK, OR A VESSEL, UNDER SAIL OR AT ANCHOR, IN A HEAVY SEA.

The circumstances under which Life-boats or other boats have to board vessels, whether stranded or at anchor, or under way, are so various that it would be impossible to draw up any general rule for guidance. Nearly everything must depend on the skill, judgment, and presence of mind of the coxswain or officer in charge of the boat, who will often have those qualities taxed to the utmost, as undoubtedly the operation of boarding a vessel in a heavy sea or surf is frequently one of extreme danger.

It will be scarcely necessary to state that, whenever practicable, a vessel, whether stranded or afloat, should be boarded to leeward, as the principal dangers to be guarded against must be the violent collision of the boat against the vessel; or her swamping or upsetting by the rebound of the sea, or by its irregular direction on coming in contact with the vessel's side; and the greater violence of the sea on the windward side is much more likely to cause such accidents. The danger must, of course, also be still further increased when the vessel is aground and the sea breaking over her. The chief danger to be apprehended on boarding a stranded vessel on the lee side, if broadside to the sea, is the falling of the masts; or if they have been previously carried away, the damage or destruction of the boat amongst the floating spars and gear alongside. It may, therefore, under such circumstances, be often necessary to take a wrecked crew into a Life-boat from the bow or stern; otherwise a rowing-boat, proceeding from a lee shore to a wreck, by keeping under the vessel's lee, may use her as a break-water, and thus go off in comparatively smooth water, or be at least shielded from the worst of the sea. This is, accordingly, the usual practice in the rowing Life-boats around the United Kingdom. The larger sailing Life-boats, chiefly on the Norfolk and Suffolk coasts, which go off to wrecks on out-lying shoals, are, however, usually anchored to windward of stranded vessels, and then veered down to 100 or 150 fathoms of cable, until near

enough to throw a line on board. The greatest care under these circumstances has, of course, to be taken to prevent actual contact between the boat and the ship ; and the crew of the latter have sometimes to jump over-board, and to be hauled to the boat by ropes.

In every case of boarding a wreck or a vessel at sea, it is important that the lines by which a boat is made fast to the vessel should be of sufficient length to allow of her rising or falling freely with the sea ; and every rope should be kept in hand ready to cut or slip it in a moment if necessary. On wrecked persons or other passengers being taken into a boat in a seaway, they should be placed on the thwarts in equal numbers on either side, and be made to sit down. All crowding or rushing headlong into the boat should be prevented as far as possible ; and the captain of the ship, if a wreck, should be called on to remain on board to preserve order until every other person had left her.

PRACTICAL HINTS FOR THE CONSIDERATION AND GUIDANCE OF MERCHANT SEAMEN AND OTHERS HAVING CHARGE OR COMMAND OF BOATS.

1. Acquire the habit of sitting down in a boat, and never stand up to perform any work which may be done sitting.

2. Never climb the mast of a boat, even in smooth water, to reeve halliards or for any other purpose, but unstep and lower the mast in preference. Many boats have been upset, and very many lives lost, from this cause. The smaller a boat, the more necessary this and the foregoing precaution.

3. All spare gear, such as masts, sails, oars, &c., which are stowed above the thwarts, should be lashed close to the sides of a boat ; and any heavy articles on the boat's floor be secured as well as possible amidships, to prevent them all falling to leeward together on a heavy lurch of the sea.

4. On a merchant vessel getting stranded or otherwise disabled in a heavy sea, or on an open coast where there is a high surf on the beach, the crew should remain by their vessel as long as they can safely do so, in preference to taking to their boats. As a general rule, much more risk is incurred in a boat than in a ship, so long as the latter will hold together. Indeed in a moderate wind on a lee shore in open situations, and even in a calm, there is frequently more surf than any ordinary ship's boat can with safety attempt, however well managed she may be.

5. After being compelled to desert a ship in an ordinary ship's boat, too great precaution cannot be taken before attempting to land. Viewed from seaward, a surf has never so formidable an appearance as when seen from the land ; persons in a boat outside the broken water are therefore apt to be deceived by it. They should, accordingly, if practicable, proceed along the land outside the surf, until abreast of a Coastguard or Life-boat Station, or fishing village, whence they might be seen by those on shore, who would then signalise to them where they might safest attempt to land, or warn them to keep off : or who might proceed in a Life-boat or fishing-boat to their aid.

coast fishing-boats being far better able to cope

with a surf than a ship's boat, and the coast boatmen being more skilful in managing boats in a surf than the crews of ships. If in the night, double precaution is necessary—and it will in general be much safer to anchor a boat outside the surf until daylight, than to attempt to land through it in the dark. For this reason an anchor and cable should always be put into a boat before leaving the ship, and also two or three buckets, in addition to the baler or hand-pump which should always be kept in her, so that she might be quickly relieved of any water she might ship.

6. Boats may ride out a heavy gale in the open sea, in safety, if not in comfort, by lashing their spars, oars, &c., together, and riding to leeward of them, secured to them by a span. The raft thus formed will break the sea : it may either be anchored or drifting, according to circumstances.

If the boat has a sail, the yard should be attached to the spars with the sail loosed. It will break much sea ahead. Also a weight suspended to the clue of the sail will impede drift when requisite. In all cases of riding by spars, a sufficient number of oars should be retained in the boat, to be ready for use in case of parting from the spars.

7. Where a surf breaks at only a short distance from the beach, a boat may be veered and backed through it from another boat anchored outside the surf, when two or more boats are in company : or she may be anchored and veered, or backed in from her own anchor.

8. Ships' boats should, in addition to their oars, masts, and sails, have the following articles placed in them, if possible, before deserting a ship at sea :—

A baler or hand-pump, and buckets ; the plug, and a spare one, both fastened by lanyards ; spare thole-pins and grummets, if rowed in that manner ; two or three spare oars ; a small hatchet ; an anchor and cable ; a long small line, as a whale-line or deep-sea lead-line, and any life-buoys or life-belts which are on board. If in the night or at a distance from the land, a lantern and matches, and if available, blue lights or hand rockets. If beyond sight of land, a compass and telescope, and of course fresh water and provisions. A log-line and sand-glass, a hand-lead and line, small arms and ammunition (with ball-cartridges and small shot). A red flag and a boat-hook for a flagstaff might often be useful to attract attention. A red flannel shirt is a good substitute for a flag.

9. In addition to the above, small empty casks or breakers, tightly bunged and lashed along the sides beneath the thwarts, would partially convert any boat into a Life-boat, by making it impossible for her to founder and by increasing her stability ; whilst by leaving less space to be occupied by water if filled by a sea, their use would much expedite the process of pumping or baling out.

10. No ship's boat should either be lowered into or hoisted from the water, without first having a rope from the fore-part of the ship made fast to her bows, by which means she will be much steadier, and will be prevented going adrift if the tackles should be prematurely unhooked or carried away. The rudder should be slung to prevent its being lost if accidentally unshipped.

THE ALBERT MEDAL,**VICTORIA R.**

VICTORIA, by the Grace of God, of the United Kingdom of Great Britain and Ireland, Queen, Defender of the Faith, &c.

To all to whom these presents shall come, greeting ;

Whereas We, taking into Our royal consideration that great loss of life is sustained by reason of Shipwrecks and other perils of the sea ; and taking also into consideration the many daring and heroic actions performed by mariners and others to prevent such loss, and to save the lives of those who are in danger of perishing by reason of wrecks and perils of the sea ; and taking also into consideration the expediency of distinguishing such efforts by some mark of Our royal favour ;

Now for the purpose of attaining an end so desirable as that of rewarding such actions as aforesaid, We have instituted and created, and by these presents for Us, our Heirs and Successors, institute and create, a new decoration, which We are desirous should be highly prized and eagerly sought after, and are graciously pleased to make, ordain, and establish the following rules and ordinances for the government of the same, which shall from henceforth be inviolably observed and kept.

First.—It is ordained, that the distinction shall be styled “THE ALBERT MEDAL,” and shall consist of a gold, oval-shaped badge or decoration enamelled in dark blue, with a monogram composed of the letters V. and A., interlaced with an anchor erect in gold, surrounded with a garter in bronze, inscribed in raised letters of gold “For Gallantry in Saving Life at Sea,” and surmounted by a representation of the Crown of His Royal Highness the lamented Prince Consort, and suspended from a dark blue ribbon of five-eighths of an inch in width, with two white longitudinal stripes.

Secondly.—It is ordained, that the medal shall be suspended from the left breast.

Thirdly.—It is ordained, that the names of those upon whom We may be pleased to confer the decoration shall be published in the ‘London Gazette,’ and a registry thereof kept in the Office of the Board of Trade.

Fourthly.—It is ordained, that any one who, after having received the medal, again performs an act which, if he had not received such medal, would have entitled him to it, such further act shall be recorded by a bar attached to the ribbon by which the medal is suspended; and for every such additional act an additional bar may be added.

Fifthly.—It is ordained, that the medal shall only be awarded to those who, after the date of this instrument, have, in saving or endeavouring to save the lives of others from Shipwreck or other peril of the sea, endangered their own lives, and that such award shall be made only on a recommendation to Us by the President of the Board of Trade.

Sixthly.—In order to make such additional provision as shall effectually preserve pure this most honourable distinction, it is ordained, that if any person on whom such distinction is conferred be guilty of any crime or disgraceful conduct which in Our judgment disqualifies him for the said decoration, his name shall forthwith be erased from the registry of individuals upon whom the said decoration shall have been conferred by an especial warrant under Our Royal Sign Manual, and his medal shall be forfeited. And every person to whom the said medal is given shall, before receiving the same, enter into an engagement to return the same if his name shall be so erased as aforesaid under this regulation. It is hereby further declared, that We, Our Heirs and Successors, shall be the sole judges of the circumstance demanding such expulsion. Moreover, We shall at all times have power to restore such persons as may at any time have been expelled to the enjoyment of the decoration.

Given at Our Court at St. James’s, this seventh day of March,
One thousand eight hundred and sixty-six, in the twenty-ninth year
of Our reign.

By Her Majesty’s Command.

(Signed) G. GREY.

The following is a complete LIST of the Recipients of the ALBERT MEDAL decoration for Saving Life, from its institution in 1866 to 1874, and distinguishing between its First and Second Class recipients :—

- | | |
|---|--|
| <p>1. Mr. Samuel Popplestone,
Farmer,
Start Farm, Devon,
1st Class.</p> <p>2. Mr. Samuel Lake,
Bombay Reclamation Com-
pany's Works.
1st Class.</p> <p>3. Mr. W. H. Millett,
Third Officer of Peninsular and
Oriental Company's Steamer
<i>Emeu</i>.
1st Class.</p> <p>4. Rev. Charles Cobb,
Rector of Dymchurch,
Kent.
1st Class.</p> <p>5. John Batist,
Boatman at the Dymchurch
Coast Guard Station.
2nd Class.</p> <p>6. John Donovan,
Chief Boatman in charge, Old
Head Coast Guard Station,
Kinsale.
2nd Class.</p> <p>7. Charles Sprankling,
Chief Boatman Coast Guard
Station,
Burton.
2nd Class.</p> <p>8. James Hudson,
Apprentice on board the vessel
<i>Maid of Orleans</i> of Ardros-
san.
2nd Class.</p> <p>9. Theophilus Jones,
Falmouth.
2nd Class.</p> <p>10. Mr. A. T. Shuttleworth,
Deputy Conservator of Forests,
Alibagh.
1st Class.</p> | <p>11. John Rickett,
A.B. of H.M.S. <i>Clio</i>.
2nd Class.</p> <p>12. Mr. Edward B. March,
H.M.'s Vice-Consul,
San Sebastian.
1st Class.</p> <p>13. Lionel Audroz de Sausmarez, R.N.,
Sub-Lieutenant H.M.S. <i>Myr-
midon</i>.
2nd Class.</p> <p>14. James Crowden,
Chief Officer Coast Guard
Station,
Muchals,
2nd Class.</p> <p>15. James Beautine Willoughby,
Captain R.N.,
Principal Transport Officer in
Egypt.
2nd Class.</p> <p>16. William Simpson, R.N.,
Late Chief Boatman in charge
of the Coast Guard Station at
Bude,
Cornwall.
2nd Class.</p> <p>17. Edward Giles,
Captain Indian Navy,
Master Attendant at Kurrachee.
2nd Class.</p> <p>18. William Balfour Forbes,
Lieutenant R.N., of H.M.S. <i>Rapid</i>.
2nd Class.</p> <p>19. Mr. Augustus R. Margary,
Assistant in H.M.'s Consular
Service in China.
1st Class.</p> <p>20. Mr. John Dodd,
British Merchant residing at
Kelung, Formosa.
1st Class.</p> |
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THE MEDAL OF THE ROYAL NATIONAL LIFE-BOAT INSTITUTION.



Obverse.—Bust of Her Majesty Queen Victoria : beneath, in minute letters, "L. C. Wyon."
Double legend, "Royal National Life-boat Institution. Founded in 1824.
Incorporated 1860. Victoria, Patroness."

Reverse.—Three sailors in a Life-boat,—one of whom is in the act of rescuing an exhausted mariner from the waves on a fragment of the wreck. "W. Wyon, Mint." Inscription, "Let not the deep swallow me up."

THE beautiful obverse of this medal, executed by L. C. WYON, Esq., represents the bust of QUEEN VICTORIA, Her Majesty's locks gracefully waving and gathered in a knot behind, from which issues a wreath of oak clustering over the forehead. This life-like portrait of the QUEEN, in high relief, conveys a truly pleasing and faithful likeness of Her Majesty, combining dignity of aspect and benevolence of nature ; and represented by Mr. WYON with the most exquisite finish, delicacy, and beauty of workmanship.

The reverse, representing the Life-boat, in which there are three sailors, rescuing a fourth from the sea, is a work of superlative merit. Two of the sailors are steadying the boat, while the other, stooping, draws in the shipwrecked sailor, whose figure is given so as to show the form in the most natural and beautiful manner ; and the expression thrown into his countenance looking up to his preserver is unrivalled by anything that we have ever seen, while the easy flowing lines of this sailor are finely contrasted by those of his companions ; the whole displaying the most perfect knowledge of the human frame, the finest taste to arrange it, and a command of the graver to embody to us what the artist's bright genius had shadowed out to himself.

But there is another pleasing motive for our admiration of this beautiful medal, as the figure who is so humanely extending his relief to the drowning mariner is a portrait of the artist (the late WILLIAM WYON, Esq., R.A.) himself.

The following is a LIST of the GOLD and SILVER MEDALS that have been voted by the Committee of the Institution, since its establishment in 1824, to persons whose humane and intrepid exertions in saving Life from Shipwreck on our Coasts have been deemed sufficiently conspicuous to merit that honourable distinction. The cases will be found recorded in detail in the several Annual Reports of the Institution.

The number of Medals granted by the Institution up to the present time is as follows :—

Gold Medals	...	...	...	...	91
Silver Medals	...	...	...	...	855
Total	...	...	...	...	946

Note.—The asterisk (*) after the name denotes the reception of a Gold Medal.

The figure after the name signifies the number of honorary distinctions received from the Institution.

Abbreviations.—Ct. G^d.—Coast Guard.

R. C.—Revenue Cruiser.

M. M.—Master Mariner.

Acraman, Mr. John, Fish-guard.	Avisé, Mr. J. N., M. M., Boulogne.	Batist, J., Ct. G ^d , Boatman.
Adair, Mr. W., Ct. G ^d , Dundrum.	Bacon, Henry, Harwich.	Beatson, G. B. M., Esq., Ct. G ^d , (2)
Adam, Mr. J., Ct. G ^d , Newcastle. (2)	Bacon, Mr. James, M. M.	Beauleclerk, The late Lord Charles.
Adams, Mr. Thomas, M. M.	Bailey, Jas., Boatman, Deal.	Beck, Robert, Point of Ayr.
Agar, J., Ct. G ^d , Morris Castle.	Baillie, Lieut. Henry, R.N.	Beddoe, D., Fishguard.
Agnes, Samuel, Seaman, Wivenhoe.	Baillie, Lieut. H., R.N., Caister.	Bedwell, Mr. W., M. M., Freswick, N. B.
Ahern, John, Kilmore.	Bain, Alex., Seaman, Skerries.	Begg, Mr., M. M.
Aikin, J., Ct. G ^d , Cushendall.	Bake, Lieut., R.N., Ct. G ^d .	Bennett, Capt. C. C., R.N.*
Alexander, W., Coxswain of the Thorpeness Life-boat.	Baker, Lt. G. S., R.N., Ct. G ^d .	Berriman, Mr. James, M. M.
Allan, Jas., Pilot at Holy Island.	Baker, Lt. W. H., R.N., Ct. G ^d .	Bevan, Mr. John, M. M., Aberavon.
Allen, Mr. Luke Jas., M. M., Wivenhoe.	Baker, Mr. T., Ct. G ^d , Brooke.	Bingham, Mr. Wm., Bell-mullett.
Amis, Edward, late Coxswain of the Palling Life-boat.	Banyard, Mr. John, Ct. G ^d , Hornsea.	Black, A., Ct. G ^d , Strangford.
Anderson, Mr. John G., R.N.	Barlach, Mr. Henry, M. M.	Blackmore, Mr. Wm., Chief Officer of Ct. G ^d , Penzance. (2)
Annis, Mr. M., Ct. G ^d , (2)	Barnard, A., Ct. G ^d , (2)	Blair, Lt. Horatio, R.N., Ct. G ^d .
Anthony, Mr. Owen, M. M., Holyhead.	Barnes, George, Christchurch.	Blampied, Mr. C., Jersey.
Armstrong, R., Newbiggin.	Barrett, Mr. J., Ct. G ^d , Carnsore. (2)	Blance, John, Sheiland.
Armstrong, Mr. W., Pilot, Blyth.	Barrett, W., Ct. G ^d , Dalbriggan.	Blissendon, William M.
Armstrong, W., Newbiggin.	Barrett, W., jun., ditto.	Blois, Capt. J. R., R.N.*
A-kin, J., Ct. G ^d , Boatman.	Barron, R. N., Esq., Dun-garvan.	Bolitho, Simon, Ct. G ^d , Bude.
Atkins, T., Ct. G ^d , Wainfleet.	Barry, Lt. G., R.N., Kinsale.	Bongourd, H., Pilot, Guernsey.
Autridge, Lieut., R.N., Doonbeg.	Bate, Samuel, Second Coxswain of Padstow Life-boat.	Bonner, G., Ct. G ^d , Collieston.
	Bates, Mr. Thos., Ct. G ^d .	Bouchard, John, St. Martin's, Jersey.
		Bowen, Lieut. C. H., R.N.*
		Boyd, Henry, Ct. G ^d .

- Boyd, Captain, R.N.
Boyle, Lieut. Hon. R. F., R.N.
Brice, W., Ct. G^d, Greencastle.
Bridle, Mr. W., M. M., Lyme.
Brine, Thos., Esq., Douglas.
Brinksmead, Mr. W., M. M., Bideford.
Brittain, Lieut. G. S., R.N., Ct. G^d, (2)*
Britton, Mr. J., Master of the American ship *Rochester*.
Broad, W., Esq., Fal-mouth.*
Brooks, A., Ct. G^d, Dungeness.
Brown, Henry, Newbiggin.
Brown, James, Dunbar.
Brown, Thos. Cresswell.
Browne, Mr. P. R. M., (2)*
Brunton, Lieut. J., R.N., Ct. G^d, (2)*
Buck, W. C., Esq., R.N., Ct. G^d.
Buckett, James, Coxswain of Brighstone Grange Life-boat.
Budd, James, Esq., Tramore.
Bulkeley, J. B., Coxswain of Teignmouth Life-boat.
Bulley, Lieut. J., R.N., (4)**
Bumby, Mr. J., Ct. G^d, Clovelly.
Bunt, Mr. John, Ct. G^d.
Burnard, Mr. T., Bideford, (2)
Burne, J., Ct. G^d, Penzance.
Burne, John, sen., Shields.
Burney, Mr. R., Ct. G^d, Banff.
Bury, Ld. Viscount, P.C., M.P.
Butcher, James, Lowestoft.
Butcher, Rich., Lowestoft.
Byrne, Mr. Lawrence, Ct. G^d.

Cahill, D. F. S., Esq., M.D., Berwick.
Cain, Wm., Isle of Man.
Callaway, W., Seaman, Lyme.
Campbell, James, Leestane.
Campbell, Miss J., Drogheda.
Campbell, Mr. Angus, cutter *Princess Royal*.
Candlish, J., Coxswain of the Lytham Life-boat.
Cannell, T., Isle of Man.
Carberry, Patrick, Wexford.
Carbis, Thos., Coxswain of the Penzance Life-boat. (2)

Carey, H., Esq., Shrove Head.
Carr, C. S., Gunner R.C. *Sylvia*.
Carr, John, Ct. G^d, Dunmanus.
Carrington, Lieut., R.N.
Carrington, W. H., Esq., Douglas.
Carter, Mr. J., Ct. G^d, Balbriggan.
Casey, M., Newcastle, Ireland.
Castel, G., Boatman, Broadstairs.
Cay, Capt. R. B., R.N., Ct. G^d, Penzance.
Chaddock, J., Ct. G^d, Stonehaven.
Chaplin, Mr. M. M.
Chappell, Mr. T., Bideford.
Chappell, Capt. W., Bideford.
Chard, J., Boatman, Thorpe.
Chittenden, E., Broadstairs.
Clark, George, Seaman.
Clark, Lieut. Joseph, R.N.*
Clayburn, T., Scarborough. (2)
Clayton, Lt., R.N., Ct. G^d.
Cleave, Mr. R., M. M., Wivenhoe.
Clope, W., Pilot, Mevagissey.
Cobb, Rev. C., M.A., Dymchurch.*
Cockrom, W., Steward, H.M.S. *Eagle*.
Coffey, P., Tramore, Waterford.
Colby, Nathaniel, Coxswain of the Pakefield Life-boat.
Cole, J., Seaman, Wivenhoe.
Collard, Mr. S., Pilot.
Collins, Mr. J., Master of the American ship *Roscini*.
Collision, Mr. R., M. M., Stonehaven.
Collopy, J., Ct. G^d, Porthcawl.
Combe, Lt. M., R.N., Dungeness.
Coneys, Mr. Anthony, Clifden.
Connick, Mr. J., Dundalk.
Cooper, Mr. Hugh, Ct. G^d, Cromaine Point.
Coppin, Lt. F., R.N., Ct. G^d.
Corbert, W., Coxswain of the Ardmore Life-boat.
Corbet, P., Pilot, Guernsey.
Corbett, W., Esq., Isle of Man.
Cork, W., Ct. G^d, Fort George.
Corkhill, W., Coxswain of the Padstow Life-boat.

Cornish, Lt. J., R.N. Bovis.
Costello, M., Esq., Ross lare.
Coul, Alexander, Montrose.
Coul, Charles, Montrose.
Cowin, J., Isle of Man.
Cox, Lt. H., R.N., Ct. G^d, (2)*
Cox, Joseph, Coxswain of the Appledore Life-boat. (3)
Cox, J., jun., Second Coxswain of the Appledore Life-boat.
Cox, W., Kilmore.
Craggs, J., Ct. G^d, Devorport.
Cragie, J., Coxswain of the Southwold Life-boat.
Cronne, Dennis, Ballycotton.
Cropper, Peter, Liverpool.
Crosby, Nicholas, Dundall.
Crosswell, Mr. T., Fowey.
Crouch, J., Boatman, Broadstairs.
Crouch, R., Boatman, Broadstairs.
Crowden, Mr. J., Chief Officer of Ct. G^d, Muchals, N.B.
Cubitt, Mr. W., Bacton. (2)
Culmer, Mr., Ct. G^d, Leigh.
Cummins, Mr. J., Coxswain of the Arklow Life-boat.
Cunningham, Mr. J., Newcastle.
Curnow, Mr. Paul, Coxswain of the St. Ives Life-boat.
Curteis, Mr. W., Ct. G^d.
Curtis, Steph., Chris church.

Dabine, Lieut., R.N., Ct. G^d.
Dand, M. H., Esq., Haulley. (2)
Dark, Mr. William, M. M. Padstow.
Darling, Wm., Light-house keeper, Fern Island Durham.
Darling, Grace, his daughter.
Darragh, H., Ct. G^d, Inn Bofin.
Davies, Capt. Geo., R.N. (4)*
Davies, Capt. Thos., R.N.
Davies, George, Hoylake.
Davison, W., Sunderland.
Dawson, Mr. T., Hartlepool.
Day, Chr., Seaman, Middlesbrough.
Day, Mr. Thomas, Eford.

- Deane, Mr. Henry, Ct. G^d.
 Delpierre, Jean A., Boulogne.
 Dent, J., Fisherman, Newbiggin.
 Desmond, John, Limerick.
 De St. Croix, Mr. F., Jersey.*
 De St. Croix, Mr. J., Jersey.*
 De St. Croix, Mr. P., Jersey.*
 Devereux, M., Master Pilot, Rosslare. (3)
 Dillon, Jas., Ct. G^d, Arklow.
 Dobson, T., Coxswain of the Donna Nook Life-boat.
 Donkin, A., Cullercoats. (2)
 Donovan, Dennis, Ct. G^d. (2)
 Donovan, J., Ct. G^d. Boatman.
 Dooley, Lt. D., R.N., Ct. G^d.
 Douglas, Alexander, Ct. G^d.
 Dower, Capt. A., Dungarvan.
 Downing, Nicholas B., Esq., Penzance.
 Drayson, D., Ct. G^d, Atherfield.
 Duffy, M., Mullaghmore.
 Dunn, Mr. William, M. M. Durban, John, Walmer.
 Dyer, B., Seaman, Wivenhoe.
 Dyer, B., Seaman, Wivenhoe.
 Dyer, Lt. H. McNeill, R.N.
 Dyer, Mr. John, Stratton.
 Earle, Lt. E. C., R.N., Rye.*
 Eastaway, R., Boatman, Ct. G^d.
 Eddy, R., Pilot at Plymouth. (3)
 Edington, Mr. Chas., Ct. G^d.
 Edwards, Mr. D., Montrose.
 Ellis, Henry, Ct. G^d, Bude.
 Elphinstone, Geo., Dundalk.
 Else, Lieut., R.N., Fowey.*
 Elton, Lt. W. H., R.N., Ct. G^d.
 Elwin, Lt., R.N., Lymington.
 Elyard, Capt. J., Broadstairs.
 Erridge, E., Boatman, Deal.
 Essell, Lieut. Wm. F., R.N.*
 Evans, Capt. Thomas, I., M. M., R.N.
 Evans, T., sen., New Brighton. (2)
 Evans, T., jun., New Brighton.
 Evans, Wm., New Brighton.
 Evans, Wm., Pilot, Neath.
 Evison, Lt. J. C., R.N., Ct. G^d.
 Farmer, David, Hayling.
 Farrin, Mr. G., H.M.S. Ajax.
 Fellowes, Capt. T. H. B., R.N.
 Festing, Lieut., R.N.
 Festing, Major F. W., R.M.A.
 Field, Lieut. Wm. Geo., R.N.
 Field, Mr. W., Milford Haven.
 Finlay, G., Ct. G^d, Lambay Island.
 Finlay, William, Montrose.
 Fish, Chas., Coxswain of the Ramsgate Life-boat.
 Fish, John, Southwold.
 Fisher, Mr. S., Horseferry-road.
 Fisher, Mrs., North Faroe Islands.
 Fitzjames, Mr., R.N., Euphrates Expedition.
 Fitzpatrick, J., Ct. G^d, Malin Head.
 Flann, Wm., Portland.
 Fleming, George, Gorleston.
 Fletcher, T., Ct. G^d, Rosslare.
 Flynn, P., Ct. G^d, Kilrush.
 Foley, Mr., M. M.
 Foley, Mr. J., Port Talbot.
 Forbes, Mr. A., Peterhead.
 Formby, Joseph, Formby.
 Forward, Mr. T. R., Commander R. C. *Sylvia*.
 Foster, J., Ct. G^d, Aldboro'.
 Found, Mr. W., M. M., Padstow.
 Fowell, John, Seaman.
 Fowler, Mr. James, M. M., Scarborough.
 Fox, Mr. John, Fleetwood.
 Foy, Thomas, Rossglass.
 Frankish, T. H., Bridlington Quay.
 Franklin, Lt. E., R.N., Hove.
 Franklyn, Lieut. G., R.N.
 Freeman, Henry, Whitby.
 Freeman, John, Seaman.
 Freeman, James, Helston.
 Freemantle, Capt. C. W., R.N.*
 Freeney, John, Killiney, Co. Dublin.
 French, Mr. Charles, Ct. G^d.
 Fulton, Mr. Robert, R.N.
 Furlong, A., Fishguard.
 Galbraith, Mrs. E., Whitley.
 Gale, Mr. W., M. M., Barkington.
 Gallagher, P., Co. Down.
 Gerrard, Mr. R., Pilot, Fleetwood.
 Giles, Mr. W., M. M., Padstow.
 Gillespie, Andrew, Gunner.
 Gilmer, Mr. W., Dundalk.
 Gilson, Lt. T. A., R.N., Ct. G^d.
 Gimar, Mr. E., Master of the French brig *Le Norman*.
 Gin, N. François, Boulogne.
 Gleeson, R. F., Wexford.
 Glover, Mr. J., M. M., Gunfleet Sand.
 Goldring, Mr. W., M. M., Hayling.
 Goss, Capt. T., R.N., Ct. G^d. (2)*
 Gough, J., Fisherman, Waterford.
 Gould, Lt. Wm., R.N., Ct. G^d.
 Graham, G., Lt. R.N., Ct. G^d.
 Graham, Capt. Philip, R.N.*
 Granby, Mr. Charles, M. M.
 Grandy, Mr., of the R. C. *Harpy*.
 Grandy, Lieut. S., R.N. (2)*
 Grant, Mr. W., Coxswain of the Margate Life-boat.
 Graves, Mr. J., M. M., Carlisle.
 Gray, A., Ct. G^d, Fort George.
 Gray, D., Ct. G^d, Kilmore.
 Gray, Mr. Geo., Bridlington.
 Gray, Mr. J., M. M., Peterhead.
 Gray, E. W. D., Esq., Dublin.
 Gregory, J., Ct. G^d, St. Andrew's.
 Grey, George, Hartlepool.
 Griffith, David, Beaumaris.
 Griffith, Robert, Anglesey.
 Griffiths, Mr. B., M. M., Portmadoc.
 Griffiths, G., Pilot, Anglesey.
 Griffiths, T., Ct. G^d, Mulbay.
 Gruer, Wm., Ct. G^d, Lossiemouth.
 Guy, Mr. Philip, Bideford.
 Halse, Mr. R., Ct. G^d, Ardmore.
 Hamilton, Mr. Geo., Ct. G^d.
 Hamilton, H. A., Esq. (3)*

- Hamono, Mr. A., M. M.
Hanning, N., Ct. G^d,
Dingle.
Hansell, P. S., Broadstairs.
Hansford, John, Weymouth.
Harrington, Mr. Jas., Brid-
lington Quay.
Harrington, T., Ct. G^d.
Harris, F. Esq., Inspecting
Officer, Ct. G^d, Seafield.
Harrison, Jacob, Shields.
Hayden, Mr. F., Sandown,
Isle of Wight.
Heal, J., Fisherman, Ather-
field.
Heard, Rich., Esq., Ct. G^d.
Heath, Mr. Joshua, Cox-
swain of the Fowey Life-
boat.
Heavy, P., Constable,
Knock.
Hein, Mr. F. J., Russian
M. M.
Henin, P., Boulogne-sur-
Mer.
Hennessy, J., Ct. G^d.
Henry, Lieut., R.N., Ct. G^d.
Henslow, Lt., R.N., Ct. G^d.
Henwood, T., Ct. G^d,
Fowey.
Herbert, The Hon. Auber-
ron.
Herrington, B., Southwold.
(2)
Hick, Mr. M., Scarborough.
Hicks, Barnard, Scilly.
Hicks, George, Ct. G^d,
Tyrella.
Hicks, Samuel, Seaman.
Higgs, S., jun., Esq., Pen-
zance. (2)
Higgins, W., Second Cox-
swain of the Penzance
Life-boat.
Highland, Owen, Anglesey.
Hildebrand, H., Esq., Clif-
den. (2)
Hill, Mr. J., Coxswain of
Newcastle (Co. Down)
Life-boat.
Hill, Mr. W., Mate.
Hillary, Sir A. Wm., Bart.
Hillary, Sir Wm., Bart.
(4) ****
Hills, W., late Coxswain of
the Padstow Life-boat. (2)
Hipplewhite, Mr. T., M. M.,
Warkworth.
Hodgson, J., Carver, Sun-
derland.
Hoed, Mr. F. P., M. M., of
Netherlands ship *Pheno-
ment*.
Hogben, J., late Coxswain
of Ramsgate Life-boat.
Hogg, Mr. William, Ct. G^d.
Holborn, S., Broadstairs.
Holland, Lieut. John, R.N.
Holman, Lieut. T., R.N.
- Hood, R., Coxswain of the
Seaton Carew Life-boat.
Hood, Mr. W., Seaton
Carew.
Hook, R., Coxswain of
Lowestoft Life-boat. (2)
Houghton, H., Hartlepool.
Howe, R., Ct. G^d, Bally-
gerig.
Howell, Mr. J., Port Talbot.
Howorth, Capt. Wm., R.N.
Hughes, E. sen., Cwmer-
ran, Anglesey.
Hughes, G., Pilot, Guern-
sey.
Hughes, Mr. John, Liver-
pool.
Hughes, T., Pilot, Holy-
head.
Hughes, Mr. W., Fisher-
man, Pittenween, N.B.
Humphreys, Mr. D., Liver-
pool.
Hurry, Mr. Stephen, M.M.
Huss, Mr. T., H.M.S.
Rover.
Hutchinson, Mr. H., Ct.
Gd.
Hutchison, Lt., Kingstown.
Hutchison, Lieut. W.,
R.N.*
Hyde, James, Scilly.
Hynds, Mr. John, Dundalk.
Hynes, B., Ct. G^d, Galway.
- Iles, The late Mr. John,
Scarborough.
Inkster, Mr. Peter, M. M.,
Shetland.
- James, Lieut. Horatio,
R.N.*
James, Lieut. Wm., R.N.*
Japp, Robert, Montrose.
Jarman, Isaac, late Cox-
swain of Ramsgate Life-
boat. (2)
Jeffers, Rich., Ct. G^d,
Dingle.
Jefferson, P., Newbiggin.
(2)
Jellard, Mr. John, M. M.*
Jenkins, L., Pilot, Port
Talbot.
Jenkins, Mr. W., Fishguard.
Jennings, Mr. Wm., M. M.,
Harwich.
Jennings, W., Ct. G^d, Looe.
Jesse, Commander R., R.N.
Jinks, Mr. R., Chief Officer
of Coast Guard, Cardin-
gan.
Joachim, Captain, R.N. (4)
Jobson, Lt. C., R.N. (2)**
John, Mr. W., Breaksea.
Johns, Mr. Richard, Meva-
gissey.
Johns, Rich., Seaman,
Fowey.
- Johns, R. O., Coxswain of
the Tramore Life-boat. (3)
Johns, Mr. W., M. M., Pad-
stow.
Johnson, Lieut. W. W. P.,
R.N.*
Johnson, Wm., Yarmouth.
Johnston, Mr. B., M. M.
Jones, Capt. C. Gray, R.N.
Jones, Mr., Ct. G^d, Wicklow.
Jones, Mr., Ct. G^d, Swords
District.
Jones, Mr. E., M. M., Port-
madoc.
Jones, Henry, Penzance.
Jones, J., Pilot, Porthcawl.
Jones, Owen, Anglesey.
Jones, Lt. R., R.N., Ct.
G^d. (3)*
Jones, Mr. T., M. M., Port
Talbot.
Jones, Mr. T., M. M., Car-
diff.
Jones, Mr. Thomas, Holy-
head.
Joy, Mr. George, M. M.*
Juniper, Wm., Mundesley.
- Kavanagh, Peter, Coxswain
of the Arklow Life-boat.
Kearon, Captain Edw., Ark-
low.
Kelly, Lieut. E., R.N.,
Mauritius.
Kelly, J. M., Appledore.
Kendall, W., Ct. G^d, Ather-
field.
Kennedy, Inspecting -Lt.
A., R.N., Ct. G^d, Bally-
heige. (2)
Kennedy, E., Ct. G^d, Dun-
fanaghy.
Kennedy, Mr. H., Belfast
Lough.
Kennedy, Master J., Bel-
fast.
Kerley, T., Ct. G^d, Pen-
zance.
Kernish, Mr. John, Ct. G^d.
Kidd, D., Fisherman, Dun-
dee.
Kinch, H., Newcastle-on-
Tyne.
King, Mr. T., M. M., Har-
wich.
King, Lt. S., R.N., South-
end.
Kisbee, Com. Thos., R.N.
Knight, J. T., Ct. G^d, Sun-
derland.
- Lake, Mr. A., Chief Officer
of Ct. G^d, Wick, N.B.
Lambert, John, Harwich.
Lambeth, Benj., Harwich.
Landells, Mr. Thos., Mil-
ford.
Lane, Lieut., R.N., Dart-
mouth.

- Langan, Mr. Michael, First Officer of steamer *Princess Alexandra*.
 Langton, Lieut. T. W., R.N., Ct. Gd.
 Large, Mr. J., Master Gunner, R.A.
 Larkin, Thomas, Seaman.
 Lavington, Lt. Thos., R.N.
 Lazoix, Lieut., of the French Marine at Dieppe.
 Leask, Mr. Robert, jun., Ireland, near Stromness.
 Leese, Charles, Gunner, R.A.
 Le Geyt, Miss A. B., Bath.
 Leggett, Edw., Gunner.
 Leigh, Lt. T., R.N., Ct. Gd. (3)**
 Leslie, Mr. J., M.M., Stonehaven, N.B.
 Lett, Lt. S. J., R.N., Ct. Gd.*
 Levett, Mr. N., late Coxswain of the St. Ives Lifeboat.
 Lewis, E., Seaman, Barmouth.
 Lewis, Mr. G., Ct. Gd., Newport, Pembroke.
 Lewis, J., Seaman, Harwich.
 Lewis, Mr. Thos., Dundalk.
 Lewis, W., Seaman, Harwich. (2)
 Lewis, W., Aberystwith.
 Ley, J., Pilot, Mevagissey.
 Liffen, Thomas, Lowestoft.
 Likely, Henry, Limerick.
 Lindsay, Lieut. Jas., R.N.*
 Lingard, Lieut. J., R.N., Whitby.*
 Lithaby, P., Ct. Gd. Boatman.
 Llewellyn, Mr. David, Ct. Gd.
 Llewellyn, M., Fishguard.
 Llewellyn, Martha, ditto.
 Lloyd, O., Ct. Gd., Lulworth Cove.
 Lloyd, Lt. S., R.N., Ct. Gd.*
 Louchet, L. P. A. B., Antie.
 Loughor, Rees, Monkash.
 Love, Private Robert, 63rd Regiment.
 Lovell, Patrick, Belmullet.
 Ludlow, Mr. I., Master of the American ship *Monmouth*.
 Lusk, Mr. A., Raeberry, N.B.
 Lyons, Lieut. Wm., R.N. (2)
 Macalister, Mr. Robt., Wick.
 Macdonald, George, Ct. Gd.
 Mackell, Mr. Patrick, Ct. Gd.
 Mackintosh, Mr. Alex., M. M.
 MacMahon, Lieut. H., M. M., East Clare Militia.
 Macnamara, Lt. T., R.N., Ct. Gd.*
 McArdle, Thomas, Dundalk.
 McCarthy, J., Ct. Gd., Dundrum.
 McCarthy, Jas., Ct. Gd., Kilrush.
 McCombie, Mr. Thomas, Second Officer of steamer *Princess Alexandra*.
 McCulloch, K., Ct. Gd., Elie. (2)
 McDonald, Mr. Wm., Irvine.
 McGenis, G., barque *Albany*.
 McGladery, Lt. J., R.N., Ct. Gd.
 McKenzie, J., Ct. Gd., Galway.
 McKinnon, Mr. J., M. M., Greenock.
 McMillan, J., Kantyre.
 McNamee, P., Ct. Gd., Dunmanus.
 McNaughten, Neil, Ct. Gd.
 McQueen, Alex., Seaman.
 Maddick, Mr. H., M. M.
 Manby, Capt. G. W.*
 Mann, Lieut., R.N., Ct. Gd.
 Mariele, J. Baptiste, French Pilot.
 Mark, Wm., Ct. Gd., Dingle.
 Marsh, Capt. D., R.N., Ct. Gd.*
 Marshall, Capt. J., Bideford.
 Martin, Mr. Chas., Ct. Gd., St. Ives, Cornwall.
 Mason, J., Ct. Gd. Boatman, Elie.
 Matthews, Lt. R. B., R.N.*
 May, Mr. A. C., H.M.S. *Rover*.
 May, W. R., Ct. Gd., Boscawell.
 Mearns, Wm., Coxswain of Montrose No. 1 Lifeboat.
 Mearns, Wm., jun., Coxswain of the Montrose No. 2 Lifeboat.
 Mearns, Mr. R., jun., M. M., Montrose.
 Metherell, Lt. R. R., R.N., Ct. Gd.*
 Mewse, A., Boatman, Lowestoft.
 Middleton, John, Boatman, Deal.
 Milburn, John, Shields.
 Milburn, Wm., Isle of Man.
 Miller, J., Ct. Gd., Devonport.
 Miller, W., Boatman, Ramsgate.
 Milligan, Mr. G., Yarmouth.
 Mills, C., Ct. Gd., Clifden, Galway.
 Minter, O., Boatman, Deal.
 Mitchell, J., Pilot, Guernsey.
 Mitchell, C., Port Isaac. (2)
 Mittin, Philip, Wexford.
 Moar, May-Stout H., Burra Ness.
 Moody, Samuel, Skegness. (2)
 Moore, Jas., Gunner, Coast Brigade, Royal Artillery.
 Moreno, Mr., Master of the Austrian Barque *Eva*.
 Morgan, John, Thurso, N.B.
 Morgan, Lt. R., R.N., Ct. Gd.
 Morgan, Mr. T., R.C. *Stork*.
 Morris, Capt. J. Row, R.N.*
 Morris, R., Seaman, Holyhead.
 Morris, Mr. W. E., Port Madoc.
 Morrison, Lt., R.N., Ct. Gd.
 Morrison, W., Pilot, Ballywalter.
 Morrison, Mr. Silvester, Ct. Gd., Sennen Cove, Lands-End.
 Mortley, Mr., Ct. Gd., Padstow.
 Moss, J., Boatman, Walmer.
 Mudd, Wm., Harwich.
 Mulligan, James, Sligo.
 Murphy, James, Ct. Gd., St. Ives, Cornwall.
 Murray, A., Ct. Gd. Boatman, Elie.
 Nelson, Mr. W., R.N., Ct. Gd.
 Newnham, Lt. N., R.N., Ct. Gd.
 Newsom, Mr. W., M. M., Harwich.
 Nichol, Mr. J., M. M., Montrose.
 Nicholas, Matt., Coxswain of the Sennen Cove Lifeboat.
 Nicholson, M., Constable, Knock.
 Nicolle, Mr. Philip, Jersey.
 Norcock, Capt. G. L., R.N.
 Norris, Benj., Boatman, Deal.
 Norris, Mr. James, M. M.
 Norris, Martin, R.N.R.
 Nott, Capt. E. B., R.N. (2)
 O'Neil, Patrick, Scilly.
 Orr, Mr. Robt., Irvine, N.B.

- O'Sullivan, Mr. M., Bere Haven.
 O'Sullivan, D., Ct. G⁴, Ballycastle.
 Owen, Capt. Wm., Holyhead.
 Owen, Mr. William, M. M.*
 Owen, Richard, Anglesey.
 Palmer, G., Esq., M.P. (2)**
 Parker, Mr. Edwin, Ct. G⁴, Mothecombe.
 Parker, Mr. Wm., M. M.
 Parker, Mr. J., Mate, Flamborough Head.
 Parrott, Mr. R., Ct. G⁴, Tenby. (2)
 Parry, Lieut., R.N.*
 Parry, Mr. Henry, Anglesey.
 Parry, Mr. R., M. M., Portmadoc
 Parsons, Lieut. Thos., R.N.
 Parsons, Lieut. Rich., H.M. 35th Regiment.
 Parsons, Lt. W., R.N., Ct. G⁴.
 Partridge, Capt. W. L., R.N., Ct. G⁴.
 Pascoe, Peter, Portleven.
 Paul, Thos., Ct. G⁴, Bude.
 Paynter, Capt. Richard.
 Peake, Admiral T. L.*
 Peake, James, Esq., H.M. Dockyard, Devonport.*
 Pearce, Rich., Esq., Penzance.
 Pearse, Jas., Pilot, Porthcawl.
 Pearse, T., Pilot, Porthcawl.
 Peart, John, Montrose.
 Pedder, Lt. W., R.N., Ct. G⁴.
 Peebles, Mr. John, Irvine.
 Peebles, Mr. T., M. M., Irvine.
 Peirson, S. H., Ct. G⁴, Ballygerig.
 Pepper, J., Ct. G⁴, Lymington.
 Perkins, Jas., Ct. G⁴, Bude.
 Perrott, Sir Edward G. L., Bart. V.P.*
 Petrie, Ellen, Shetland.
 Phillips, J., Newcastle, Ireland.
 Picard, Mr. P., French M. M.
 Pillar, W., Gunner, H.M.S. *Eagle*.
 Pincomb, T., Pilot, Exmouth.
 Pitt, E., Ct. G⁴, Atherfield.
 Pomeroy, H., Ct. G⁴, Megavisey.
 Porter, William, Seaman.
 Powell, Mr. John, M. M., Gunfleet Sand.
 Pratt, Lt. Jas., R.N., Ct. G⁴.
 Prattent, Lieut. John, R.N.*
 Preston, Mr., Ct. G⁴, Newton.
 Prewell, R., Ct. G⁴, Kilrush.
 Price, Thos., Beaumaris.
 Pride, C., Ct. G⁴, Christchurch.
 Prior, Lt. T. H., R.N., Ct. G⁴.
 Prosser, Mr. H., Ct. G⁴.
 Purdy, H., Ct. G⁴, Tyrella.
 Puxley, H., Esq., Dunboy Castle.
 Pym, Lt. R. E., R.N., Whitby.*
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 Quayle, Capt. E., Isle of Man. (2)
 Quigley, Mr. W. T., Ct. G⁴, Whitby.
 Quirke, G., Esq., Douglas.
 Rae, Wm., Whitburn.
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 Randle, Mr. J., Bristol.
 Rawstone, Lt., R.N., Ct. G⁴.
 Ray, J., Boatman, Tenby.
 Rays, Lieut. H. R., R.M.
 Read, Lieut. J., R.N., Ct. G⁴.
 Reade, W. M., Esq., Trimore.
 Reading, Mr. Daniel, Master of Ramsgate Harbour steam tugs.
 Redford, J., Cullercoats.
 Rees, Mr. A., Port Talbot.
 Rees, Mr. T. M., St. Davids.
 Rees, Mr. W., Fishguard.
 Reeve, Mr. J., Swansea.
 Regan, D., Ct. G⁴, Kilmore.
 Renowden, J., Ct. G⁴, Dingle.
 Richards, Mr. E., M. M.
 Richards, Mr. T., M. M.
 Richards, James, Penzance.
 Richards, Henry, Penzance.
 Richardson, Mr. A., M. M.
 Richardson, W., Esq., Coleraine.
 Ridge, Capt. G. A. E., R.N.
 Ridge, Mr. J., Mate of R.C. *Kite*.
 Ridge, Mr. J., Ct. G⁴, Cadgwith.
 Rioch, R., Ct. G⁴, Collieston.
 Rivers, T., Ct. G⁴, Lydd.
 Roberts, Mr. John, Clogwyn.
 Roberts, Mr. R., Carnarv.
 Roberts, O., Pilot, Anglesey.
 Robertson, Capt. D., R.
 Robertson, Lieut. R., R.
 Robertson, Lieut. J. H. I. R.N.
 Robins, Mr. J. Gunn, G⁴.
 Robinson, Mr. J., Abdeen.
 Robinson, Lieut., R.N.
 Robinson, T., Whitby.
 Rockcliffe, W., Southport.
 Roderick, E., Ct. G⁴, Dumanus.
 Roderick, J. S., Esq., Amore.
 Rogers, J., *Royal Charter*.
 Roe, R., Esq., J.P., Lymouth.
 Rose, W., Boatman, Lowestoft.
 Ross, Capt. Sir Thos. R.N.*
 Ross, R., Ct. G⁴, Curcloe.
 Ross, R., Ct. G⁴, Dunmo.
 Rossiter, T., Wexford.
 Rothery, Lieut. J., R.N.
 Rowe, W., Ct. G⁴, Ding.
 Rowe, W., Scilly.
 Rowe, W., Seaman, Heston.
 Rowlands, Mr. T., M. M.
 Newport, Pembroke.
 Rowlands, Mr. W., Cswain of the Holyhe Lifeboat. (2)
 Ruddock, J., Boatman.
 Russell, R., Esq., J. Limerick.
 Rutter, Mr. J., Scarborough.
 Rymer, Lt. D., R.N., Ct. G⁴.
 Salmon, C., Fishermans.
 Gorleston.
 Sanderson, Lieut. J. I. R.N., Ct. G⁴, Bridge Don.
 Sands, Mr. R., M. M., Ihamas.
 Sarony, Mr. O., Scarborough.
 Sauvage, Mr., Master French fishing-boat *I. belle*.
 Sawtell, Mr. Edwin, Ct. G⁴.
 Scarlett, R., Harwich.
 Scott, Mr. G. R., *Beethov*.
 Scott, Mr. J., M. M.
 Selly, W. H., Ct. G⁴, Penzance. (2)
 Sergeant, Lt. J., R.N., Ct. G⁴.

- Sewell, Lt. H. F., R.N.,
Ct. G^d.
 Sewell, Master John, Belfast.
 Shankey, R., Ct. G^d, Dundalk. (2)
 Shannon, P., Ct. G^d, Kilrush.
 Sharrock, J. P., Ct. G^d, Boscastle.
 Shaw, Lieut. C., R.N., C. G^d.
 Shea, D., Coxswain of the Padstow Life-boat. (3)
 Shea, D., Ct. G^d, Porthcawl.
 Sheldon, Robt., Redcar.
 Simpson, Mr. Jas., Rams-gate.
 Sims, J., Ct. G^d, Dungeness.
 Sims, Lt. And., R.N. (2)
 Sinclair, Mr. B., Thurso, N.B.
 Sinnott, R., Ct. G^d, Mullaghmore.
 Smallridge, Mr. J. H., Coxswain of the Braunton Life-boat.
 Smith, F., Boatman, Lowestoft.
 Smith, J., Shields.
 Smith, Mr. J., Thurso.
 Smith, Mr. Owen, Bideford.
 Smith, Peter, Ct. G^d, Lydd.
 Smith, T., Ct. G^d, Ballina.
 Smith, Mr. W., Aldborough.
 Smyth, H., Ct. G^d, Kilmore.
 Snell, Lt. G., R.N., Ct. G^d.
 Somerville, Lt. J., R.N., Ct. G^d. (2)
 Southey, Lt., R.N., Ct. G^d.
 Spark, Mr. A., M. M.
 Spraggs, J., Seaman, Hayling.
 Stables, R., Holyhead.
 Stannard, Mr. F., M. M., Southwold.
 Stap, Mr. R., Ct. G^d, Dunbar.
 Stark, Lt. P., R.N., Ct. G^d. (2)
 Starke, Mr. J., Ct. G^d, Queenstown.
 Steane, Lt. J., R.N., Rye.*
 Stephens, A., Tramore.
 Stephenson, Mr. B., Coxswain of Boulmer Life-boat.
 Steel, Mr. C., Ct. G^d.
 Stewart, W., Ct. G^d, Ardmore.
 Storr, J., Whitby.
 Stone, J., Ct. G^d, Boscastle.
 Stragnell, Lt., R.N.
 Strahan, Mr. H., Pilot.
 Strains, Mr. J., Ct. G^d.
 Strong, Mr. Fran. F. M.
 Stuart, Lt. J., R.N., Ct. G^d.
 Stuart, Lt. T., R.N., Ct. G^d. (2)
 Stubbs, C., Seaman.
 Stubbs, H., Atherfield.
 Stuggins, Mr. W., Second Coxswain of Teignmouth Life-boat.
 Sullivan, J., Seaman, Newhaven.
 Sumner, Mr. R., Formby.*
 Superville, Mr., M. M., Bordeaux.
 Surrey, W., Penzance.
 Sutherland, D., Ct. G^d, Katerline.
 Sutter, Mr. J., M. M.
 Sutton, Mr. C., Port Talbot, M. M.
 Swarbrick, Mr. W., M. M.
 Symes, Lt. H. A. S., R.N., Ct. G^d.
 Syngé, The Rev. A., Balbriggan.
 Tait, Grace, Shetland.
 Talbot, C. R. M., Esq., M.P.
 Taylor, J., Ct. G^d, Dundrum Bay.
 Taylor, Mr. W., C. O., Ct. G^d, Robert's Cove.
 Taylor, Mr. W., C. O., Ct. G^d, Dunny Cove. (2)
 Tegg, Mr. T., M. M., Cornwall.
 Terrett, T., Constable, Knock.
 Thomas, J., Ct. G^d, Atherfield.
 Thomas, J., Ct. G^d, Rocken, Isle of Wight.
 Thomas, R. J., Coxswain of New Brighton Life-boat.
 Thomson, D., Thurso, N.B.
 Thompson, Mr. G., Annalong.
 Thompson, Mr. R., Kirkpatrick, Chief Officer of Ct. G^d. (3)
 Thomson, W., Apprentice, smack *Ruby* of Hull.
 Thorp, Mr. T., Newcastle.
 Tindall, Mr. Smith, M. M., Scarborough.
 Tindall, The late W., Esq., Scarborough.
 Toole, Capt. W., Curracloe.
 Toomey, J., Kingstown.
 Town, J., Ct. G^d, Folkestone. (2)
 Town, J., Ct. G^d, Castle-gregory.
 Tredwen, Mr. R., Padstow.
 Tregidgo, Mr. W. H., Ct. G^d, Newquay. (3)
 Trent, J., Fisherman, Atherfield.
 Tresilian, Mr. R.
 Triphook, Mr. R., R. C. *Hamilton*, Dumworldly.
 Trott, T., Boatman, Deal.
 Tuckfield, Mr. T., Bideford.
 Tudon, Capt. J., R.N., Wick. (2)
 Tully, W., Newcastle.
 Turnbull, R., Fisherman, Dunbar.
 Turner, Lt. C., R.N.
 Turpin, Mr. J., Ct. G^d, Salcombe.
 Tutt, E., Ct. G^d, Dunmanus.
 Tuvache, Mr., M. M., French.
 Urell, Mr. Joseph, Ct. G^d, Hope Cove.
 Usher, Mr. J., Bridlington.
 Van Houten, Mr. W., Rotterdam. (2)
 Vicary, Lt. W., R.N., Atherfield.*
 Vondy, I., Isle of Man. (3)
 Waddy, Dr., Churchtown.
 Wade, Mr., M. M., Padstow.
 Wake, Mr. Baldwin Arden, Mid. H.M.S. *Forester*.
 Wales, G., Boatman, Broadstairs.
 Wales, J., ditto, ditto.
 Walker, Lieut., R.N.
 Walker, Mr. J., Brigg.
 Walker, Mr. W. Lewis, Beaumaris. (2)
 Wallace, Mr. J., M. M.
 Walsh, J., Esq., Lloyd's Agent, Dublin.
 Walsh, Mr. Martin, M. M.*
 Ward, J., R. C. *Sylvia*, Penzance.
 Ward, Capt. J. R., R.N.
 Warde, D. T., Ct. G^d, Salcombe.
 Warn, W., sen., Atherfield.
 Warn, W., jun., ditto.
 Warren, Lt. C. D., R.N.
 Wassey, Capt. E. F. N. K., R.N. (3)
 Waters, Wm., Southwold.
 Watt, A., Montrose.
 Watts, Lieut. W. S., R.N.*
 Watts, Mr. Charles, M. M.
 Watts, Mr. William, M. M.
 Waugh, E., Ct. G^d, Wexford.
 Weblin, J., Ct. G^d, Tramore Bay.
 Wedge, W., Ct. G^d, Salcombe.
 Weekes, Wm. Wall, Seaman.
 Welsh, Mr. M., M. M.

Westbrook, Lieut., R.N.	Williams, Rev. Owen	Wilson, W., Pilot, Holy
Wharrier, Mr. William,	Lloyd, Bodfean.	Island.
Ramsgate.	Williams, Rev. J., Angle-	Wishart, J., Wick, N.B.
Wheeler, C., Atherfield.	sey.*	Wood, Mr. T. L., Ct. G ^d . (2)
Wheeler, J., ditto. (2)	Williams, Mr. J., Bideford.	Woodham, Lt., R.N.,
Wheeler, R., ditto.	(2)	Banff, N.B.
Wheeler, W., Pilot, Graves-	Williams, Mr. J. M., Pad-	Wordley, S., Harwich.
end.	stow.	Wright, John, Seaman,
White, James, Coxswain of	Williamson, Mr. R., M. M.	barque <i>Alceste</i> of Green-
the Fishguard Life-boat.	(2)	ock.
White, Joseph, Portland.	Williamson, Robert, Thurso,	Wright, Mr. J., M. M.
White, J. Kearney, Esq.,	N.B.	Wyatt, G., Seaman, Har-
Ct. G ^d . (2)	Williamson, W., Pilot, Wick,	wich.
Whitley, Mr. Elias, St. Mar-	N.B.	Wylde, Lt. S., R.N., Ct. G ^d .
tin's, Jersey.	Wilson, J., Pilot, St. An-	Wyrill, H., Boatman, Scar-
Wilkie, Mr. C., M. M.,	drews.	borough.
Hermitage Street.	Wilson, Mr. J., M. M.,	Young, A., Ct. G ^d , Shore-
Willcox, J., Ct. G ^d , Lydd.	Liverpool.	ham.
Williams, Mr. D., Aber-	Wilson, Ralph, Holy Island.	Young, A. H., Ct. G ^d ,
dovey.	Wilson, T., Esq., M.P.*	Blatchington.
Williams, Mr. J., Swansea.	Wilson, T., Pilot, Holy	Young, Lt. T., R.N., Ct. G ^d .
Williams, Owen, Cemlyn.	Island.	

REWARDS FOR SAVING LIFE BY SHORE BOATS.

The following is a copy of a handbill circulated on the coasts of the United Kingdom by the Institution, for the purpose of informing boatmen and others that it encourages laudable exertions to save life from Shipwrecks :—

TO BOATMEN AND OTHERS.

To encourage prompt and energetic exertions in time of danger on the part of boatmen and others, by quickly putting off to save life in CASES of WRECKS on the coasts of the British Isles, either by shore boats or other means,

THE ROYAL NATIONAL LIFE-BOAT INSTITUTION

grants rewards of money or medals. In all cases the rewards are given without further delay than is necessary to obtain proof of the merits of each case, and to insure their being paid to the right parties.

Application to be made to the Secretary.

By Order of the Committee.

ROYAL NATIONAL LIFE-BOAT INSTITUTION,
14 John Street, Adelphi, London, W.C.

THE SAFETY FISHING-BOAT OF THE INSTITUTION.

THE accompanying figures show the general form, the nature of the fittings, air-compartments, shifting-coamings, and hatches of one of the safety boats, 40 ft. in length and 14 ft. in breadth.

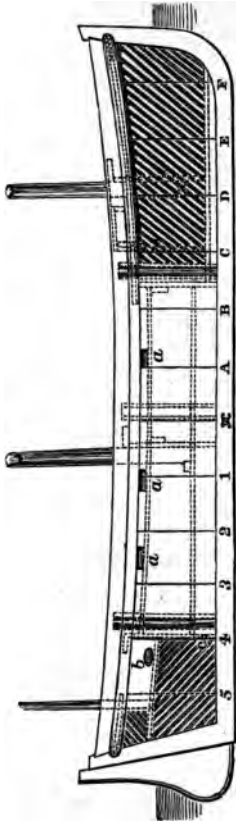


FIG. 1.—SHEER PLAN.

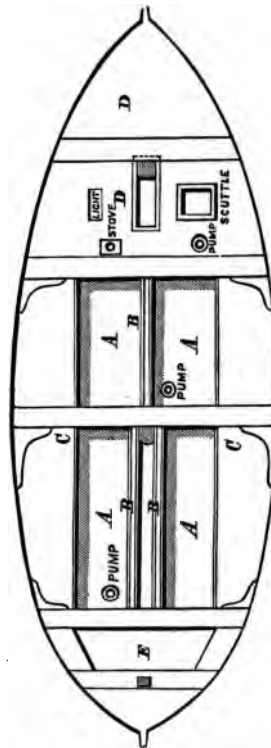


FIG. 2.—DECK PLAN.

In figs. 1 and 2, the elevation and deck-plans, and the general exterior form of the boat are shown, with the sheer of gunwale, length of keel, and rake of stem and stern-post.

The dotted lines of fig. 1 show the position of the compartments, bulk-heads, masts, pumps, thwarts, and shifting flat or deck. *a*, Scuttle in boat's side above the side decks. *b*, Scupper in the boat's side above the stern deck. *c*, Screw plug, to drain the stern compartment.

In fig. 2, *A* represents the open hatchways of the main-hold, to be covered with portable hatches and a water-tight tarpaulin cover in gales of wind; *B*, shifting coamings for the hatchways; *C*, the side-deck; *D*, the fore-castle-deck; and *E*, the stern-deck.

Fig. 3 represents a section at the after air-compartment, showing the thwart and crutch to receive the mast, and the stern-deck.

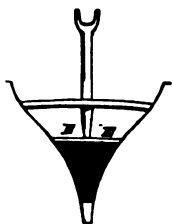


FIG. 3.—SECTION AT 5.

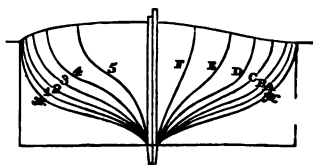


FIG. 4.—BODY PLAN.

In fig. 4, the exterior form of transverse sections, at different distances from stem to stern, is shown.

Fig. 5 represents a section at the fore air-compartment, showing the thwart and mast.

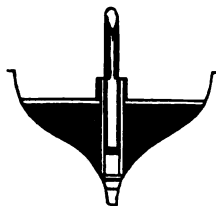


FIG. 5.—SECTION AT D.

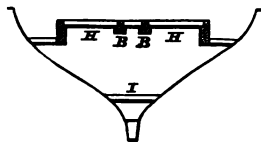


FIG. 6.—SECTION AT 3.

In fig. 6, the shifting coamings over the main-hold are shown, with the portable hatches (*H*) in place, and (*I*) the shifting deck or flat.

Fig. 7 represents a midship transverse section, *F* the thwart, *C* the side-deck, *B* the shifting coaming over the fore-hold, *I* the shifting deck or flat, and *H* the hatches in place.

Fig. 8 represents a section abaft the foremost bulkhead, showing the

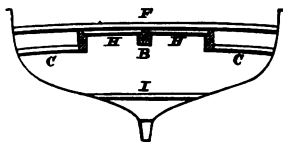


FIG. 7.—SECTION AT A.

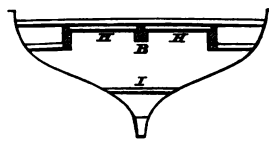


FIG. 8.—SECTION AT B.

shifting coaming (B) and portable hatches (H) in place ; and (I) the shifting deck or flat.



**EXTRACTS FROM THE BOARD OF TRADE INSTRUCTIONS FOR
USING THE ROCKET AND MORTAR APPARATUS AT A WRECK.**

DUTIES OF INSPECTING OFFICER.

The Inspecting Officer of Coastguard is held responsible for the efficiency or otherwise of the Mortar and Rocket Apparatus in his Division.

The number of rockets for each apparatus is eighteen, and the number of rocket lines two or more, as circumstances may in the opinion of the Inspecting Officer require.

As much of the success in the use of the apparatus depends upon the promptness with which it is brought into action, and on the precision and efficiency of the first shot, the Inspecting Officer should make himself thoroughly acquainted with the use and application of all its parts, and should take care that this is also understood by the Officers and men under his command.

DESCRIPTION OF THE APPARATUS.

The following parts of the apparatus for saving life from Shipwreck are required to be provided in addition to the projectiles and the means supplied for launching them ; namely,

- (a.) A suitable *cart or wagon* in which the apparatus can be carried to a wreck. This should be supplied with springs and good side lamps, and should be sufficiently large to contain the whole of the apparatus and gear. The wheels should be made with broad or narrow tires to suit the character of the coast on which it may be worked. Each cart or wagon should carry drag ropes and fittings, similar to those used with guns in field batteries, so that it can either be dragged by men or horses as circumstances may require. A box to contain small stores, such as a hammer, nails, grease, spun yarn, &c., should be fitted to the side of the cart or wagon before the wheel. Carts or wagons should in all cases be provided with iron crutches on each side above the wheels, on which the rocket tube, staves, and triangle can be carried.
- (b.) Two or three *Rocket lines* laid up loose. One end of the rocket line is to be attached to, and launched with the shot or rocket.
- (c.) *Boxes* fitted with faking pins, in which to stow the rocket lines.
- (d.) A "*Hawser*" of 3-inch Manilla right-handed rope, from 40 to 120 fathoms, according to the steepness or flatness of the shore.
- (e.) A "*Whip*" of Manilla line, not exceeding $1\frac{1}{2}$ inch, rove through a single Tailed Block. The "whip" to be made of left-handed

rope the reverse of the hawser, and to be twice as long as the hawser, and the tail of the block to be at least 2 fathoms in length, and the sheave to be brass bushed. The ends of the "whip" to be spliced together, so as to convert it into an endless rope.

- (f.) A "*Sling Life Buoy*," with petticoat breeches, in which to place the person to be rescued, and haul him ashore.
- (g.) A "*Traveller*," or inverted block with a brass sheave, to be attached to the "*sling*," and carry it along the hawser.
- (h.) A "*Double Block Tackle purchase*" for setting taut the hawser, one of the blocks being fitted with two tails to bend on to the hawser, or with luff tackles fitted to put on to the hawser with strop and toggle (like a top-gallant or royal purchase). The blocks to be brass bushed.
- (i.) Three small *spars* to form a triangle over which the hawser may be passed, and thereby raised higher above the water. This will be found convenient on parts of the coast where the shore is flat.
The triangle should be fitted with a swivel snatch block, brass bushed instead of standing hooks, the strapping of the block to be of good iron.
- (k.) An "*Anchor*" with one fluke, to be buried in the earth, sand, or shingle, to which to set up the hawser by means of the tackle purchase. Or in some places where the shore is composed of soft shingle or sand, and where an anchor will not hold, a stout plank or backer 5 or 6 feet long, with a fathom of chain of sufficient strength fastened round it amidships, may be substituted for the anchor. This plank being buried 3 or 4 feet beneath the ground, and the end of the chain, with a ring attached, led to the surface, the hawser may be set up to it, by the tackle purchase in the same manner as to an anchor.
- (l.) A "*Red Flag*" 2 feet by 3 feet, fixed at the end of a staff 5 feet long; and a "*Lantern*" with a red lens fixed in it; to be used as signals in the manner hereafter directed.
- (m.) Two or three *spades* or *shovels*, and a *pickaxe*, to be of good quality and suitable for the work, a *Salvagee strop*, and a few pieces of *extra rope*, to be used as occasion may require.
- (n.) A light *hand-barrow*, when thought necessary, for carrying portions of the apparatus from the cart to the place where it is to be used.
- (o.) Three sets of *Tally boards*, each set consisting of two boards of hard wood about 9 inches long by 5 inches wide and $\frac{3}{4}$ inch thick. These boards to have the following words painted on them in white letters on a black ground.—English on one side and French the other; viz.—

No. 1. Tally board to be attached to the whip.

English,—

"Make the tail of the block fast to the lower mast well up.
If masts are gone, then to the best place you can find. Cast off

rocket line, see that the rope in the block runs free, and show signal to the shore."

French,—

"Fouettez la poulie le plus haut possible sur le bas-mât, ou l'endroit le plus favorable si les bas-mâts sont perdus. Détachez la ligne, voyez que la corde coure facilement dans la poulie, et faites signal au rivage."

No. 2. Tally board to be attached to the hawser.

English,—

"Make this hawser fast about 2 feet above the tail block. See all clear and that the rope in the block runs free, and show signal to the shore."

French,—

"Amarrez cette aussière à deux pieds environ au dessus de la poulie. Voyez que rien n'engage et que la corde coure facilement dans la poulie, puis faites signal au rivage."

(p.) *Long light.* One box of Colonel BOXER's to be used as occasion may require.

(q.) "*Signal Rockets.*" Eighteen throwing white and red stars.

(r.) Two *heaving sticks* and lines to be used as occasion may require.

(s.) A *water barrico* with a large square hinge bung large enough to admit a man's hand will be supplied if specially demanded.

(t.) A *tarpaulin* to cover over the apparatus and stores in the cart when the apparatus is not in use, and fitted with becketts and tent pegs to secure it on the beach or shore for coiling the whip on when the apparatus is in use.

(u.) Three of Colonel MILLWARD's Lights for illuminating at Wrecks.

(v.) Two of Captain WARD's Life Belts, and two *Life Lines*.

(w.) A Rope Ladder 120 feet long (when necessary) for going over steep cliffs.

The whole of the gear and a sufficient supply of Rockets, &c., are to be kept in the Rocket Apparatus cart IN GOOD ORDER, DRY, AND READY FOR IMMEDIATE USE.

USING THE APPARATUS AT A WRECK.

The Officer of Coastguard and Receiver of Wreck have power under sections 441 and 442 of the Merchant Shipping Act to compel the owner of horses and carts to lend them for use in cases of Shipwreck. But it is hoped that by making a proper arrangement, and coming to an understanding with one or two owners of horses on the spot, recourse to the power conferred by the Act will not be necessary.

The attention of Coastguard Officers is directed to the necessity of having arrangements made with the neighbouring farmers for the use of their horses or carts to convey the apparatus to the scene of a wreck, in order that no delay may occur when a wreck is reported.

The Inspecting Officer of the Coastguard, or the principal Officer of



To face p. 188.

THE ROCKET-APPARATUS FOR SAVING LIFE FROM SHIPWRECK.



the Customs or of the Coastguard who is present at a wreck, is to exercise the powers given him by the 441st to 447th sections of the Act, and is to take command of all persons assembled, and assign to each such work as he may consider necessary for establishing a communication with the wrecked ship, and hauling the people ashore speedily. Should any persons refuse to do the work allotted they are liable to a penalty of 50*l.* under the 441st section of the Act.

It is unnecessary to describe minutely the manner in which the rocket or mortar is to be arranged for firing, as a knowledge thereof, and of the manner of using the apparatus, can only be obtained by actual practice. It may, however, be observed that an angle of 45 degrees for the mortar, and 35 to 38 degrees for BOXER's rocket, are the elevations which appear to give the greatest range. The first shot or rocket should always be fired with the rocket line in the box, and the box should be slightly tilted towards the wreck. But for subsequent shots the line may be faked on the beach, care being taken that no impediments are in the way of its running out rapidly when the rocket or shot is fired.

Great care should be taken in arranging the apparatus with precision for firing the first shot or rocket, as after the line becomes wetted and dirty the chances of effecting a communication are more remote.

The rocket line should be fastened to the rocket stick. The line should also have a knot made near the hole at the end of the rocket staff so that if the line is burnt near the rocket the knot will catch the stick.

When the line has been thrown over the ship and has been grappled by the crew a signal will be made in the following manner. If in the day-time one of the crew, for this purpose separated from the rest, will wave his hat or his hand, or a flag or handkerchief; or, if at night a rocket, a blue light, or a gun will be fired, or a light shown over the ship's gunwale for a short time and will then be concealed.

On this signal being seen on shore the inshore end of the shot or rocket line should be made fast to the whip, *by being bent round both parts of it* at about two fathoms from the tailed block, and a signal should then be made as follows, for those on the wreck to haul off the line.

One of the men on shore is to be separated from the rest, and in the day-time is to wave a small red flag, or at night is to show a red light for about a minute and then again conceal it.

The crew of the wreck on seeing this signal will haul on the shot or rocket line till they get the whip and tailed block, when they will make the tail of the block fast to the mast *as high up as circumstances will permit*, or to the HIGHEST secure part of the vessel, and will cast off the rocket line, and make the signal as before for those on shore to haul off the hawser.

As soon as this signal is perceived by those on shore the whip (being previously made fast to the hawser at two or three fathoms from its end) will be manned, and the hawser hauled off by it to the wreck, by those on shore.

As soon as the persons on the wreck get hold of the hawser, they will proceed to *make it fast to the wreck at about 18. inches ABOVE* the

place where the tail of the block is fixed ; and when they have secured it, and disconnected the hawser from the whip, they will signal as before to the people on shore.

On perceiving this signal, the hawser is to be set up by means of the double block tackle purchase ; and the breeches buoy (the block of which will have been adjusted on the hawser) is to have the whip secured to it by a clove hitch ; and by means of the whip, is to be hauled off to the wreck by those stationed for the purpose on the shore ; who also on the next signal being shown, implying that a person is secured in the sling, will haul him ashore, and repeat the same operation to and fro until all are landed. The parts of the whip line should be kept as far apart as possible.

Circumstances may require some deviation from the above rules. For instance, if the wrecked vessel be subjected to violent motion by the beat of the sea, it will be better not to set up the hawser at all, but to man it, with as many hands as can be spared, and reeve it over a triangle, if necessary, when by hauling and veering, on it, following the motion of the vessel, a sufficiently uniform strain on it would be obtained without the risk of carrying it away.

Again, circumstances might arise, as they have sometimes done, when the immediate breaking up of the wreck might be imminent, and the delay in getting the hawser on board be of serious moment. In such a case the floating sling buoy should be hauled off by the whip alone, and the wrecked persons brought ashore in it floating in the water.

And again ; in cases where the wreck happens on a flat shore, the hawser need not be set up at all, but the whip made to answer for both hawser and whip. When this is the case the travelling block should be taken from the sling life buoy and one end of the whip should be run through the thimble attached to the life-buoy slings. The ends of the whip should then be made fast to the grummets on the sides of the life-buoy.

In all other cases the hawser should be set up when practicable.

The illustration will help to explain how the mortar and rocket apparatus is to be used.



BAROMETER INSTRUCTIONS COMPILED BY THE LATE ADMIRAL
FITZ-ROY, F.R.S.



THE barometer should be set regularly by a duly-authorized person, about sunrise, noon, and sunset.

The words on scales of barometers should not be so much regarded for weather indications as the *rising* or *falling* of the mercury ; for if it stand at *changeable* (29'50), and then rise towards *fair* (30'00), it presages a change of wind or weather, though not so great as if the mercury had risen higher ; and, on the contrary, if the mercury stand above *fair* and then fall, it presages a change, though not to so great a degree as if it had stood lower : beside which, the direction and force of wind are not in any way noticed.

It is not from the point at which the mercury may stand that we are alone to form a judgment of the state of the weather, but from its *rising* or *falling* ; and from the movements of immediately *preceding* days as well as hours, keeping in mind effects of change of *direction*, and dryness, or moisture, as well as alteration of force or strength of wind.

It should always be remembered that the state of the air *foretells coming* weather, rather than shows the weather that is *present*—(an invaluable fact too often overlooked)—that the longer the time between the signs and the change foretold by them, the longer such altered weather will last ; and, on the contrary, the less the time between a warning and a change, the shorter will be the continuance of such foretold weather.

If the barometer has been about its ordinary height, say near thirty inches at the sea-level, and is steady on rising, while the thermometer falls, and dampness becomes less,—north-westerly, northerly, or north-easterly wind, or less wind, less rain or snow may be expected.

On the contrary, if a fall takes place with a rising thermometer and increased dampness, wind and rain may be expected from the south-eastward, southward, or south-westward.

A fall with low thermometer foretells snow.

When the barometer is rather below its ordinary height, say down to near twenty-nine inches and-a-half (at sea-level), a rise foretells less wind, or a change in its direction towards the northward—or less wet ; but when it has been very low, about twenty-nine inches, the first rising usually precedes or indicates strong wind—at times heavy squalls—from the north-westward, northward, or north-eastward ; *after* which violence a gradually rising glass foretells improving weather, if the thermometer falls ; but if the warmth continue, probably the wind will back (shift against the sun's course), and more southerly or south-westerly wind will follow, especially if the barometer rise is sudden.

The most dangerous shifts of wind, or the *heaviest* northerly gales, happen *soon* after the barometer *first* rises from a very low point ; or, if the wind veers *gradually*, at some time afterwards.

Indications of approaching change of weather, and the direction and force of winds, are shown less by the height of the barometer than by its falling or rising. Nevertheless, a height of more than thirty (30'0) inches (at the level of the sea) is indicative of fine weather and *moderate* winds, except from east to north *occasionally*.

A rapid rise of the barometer indicates unsettled weather ; a slow movement the contrary ; as, likewise, a *steady* barometer, which, when continued, and with dryness, foretells very fine weather.

A rapid and considerable fall is a sign of stormy weather, and rain or snow. Alternate rising and sinking indicates unsettled and threatening weather.

The greatest depressions of the barometer are with gales from S.E., S., or S.W. ; the greatest elevations, with wind from N.W., N., or N.E., or with calm.

A sudden fall of the barometer, with a westerly wind, is sometimes followed by a violent storm from N.W., or N., or N.E.

If a gale sets in from the E., or S.E., and the wind veers by the South, the barometer will continue falling until the wind is near a marked change, when a lull *may* occur ; after which the gale will soon be renewed, perhaps suddenly and violently, and the veering of the wind towards the N.W., N., or N.E., will be indicated by a rising of the barometer, with a fall of the thermometer.

After very warm and calm weather a storm or squall, with rain, may follow ; likewise at any time when the atmosphere is *heated* much above the *usual* temperature of the season.

To know the state of the air not only the barometer *and* thermometer, but appearances of the sky should be vigilantly watched.

SIGNS OF WEATHER.

Whether clear or cloudy, a rosy sky at sunset presages fine weather ; a red sky in the morning, bad weather, or much wind, perhaps rain ; a grey sky in the morning, fine weather ; a high dawn, wind ; a low dawn, fair weather.*

Soft-looking or delicate clouds foretell fine weather, with moderate or light breezes ; hard-edged, oily-looking clouds, wind. A dark, gloomy, blue sky is windy ; but a light, bright-blue sky indicates fine weather. Generally, the *softer* the clouds look, the less wind (but perhaps more rain) may be expected ; and the harder, more "greasy," rolled, tufted, or ragged, the stronger the coming wind will prove. Also, a bright yellow sky at sunset presages wind ; a pale yellow, wet ; and thus, by the prevalence of red, yellow, or grey tints, the coming weather may be foretold very nearly—indeed, if aided by instruments, almost exactly.

Small inky-looking clouds foretell rain ; light scud clouds driving across heavy masses show wind and rain ; but if alone, may indicate wind only.

High upper clouds crossing the sun, moon, or stars in a direction different from that of the lower clouds, or the wind then felt below, foretell a change of wind.

After fine, clear weather, the first signs in the sky of a coming change are

* A high dawn is when the first indications of daylight are seen above a bank of clouds. A low dawn is when the day breaks on or near the horizon, the first streaks of light being very low down.

usually light streaks, curls, wisps, or mottled patches of white distant clouds, which increase, and are followed by an overcasting of murky vapour that grows into cloudiness. This appearance, more or less oily, or watery, as wind or rain will prevail, is an infallible sign.

Light, delicate, quiet tints or colours, with soft, undefined forms of clouds, indicate and accompany fine weather; but gaudy or unusual hues, with hard, definitely-outlined clouds, foretell rain, and probably strong wind.

When sea-birds fly out early and far to seaward, moderate wind and fair weather may be expected. When they hang about the land, or over it, sometimes flying inland, expect a strong wind, with stormy weather. As many creatures besides birds are affected by the approach of rain or wind, such indications should not be slighted by an observer who wishes to foresee weather.

Remarkable clearness of atmosphere near the horizon, distant objects, such as hills, unusually visible, or raised (by refraction),* and what is called "a good *hearing* day," may be mentioned among signs of wet, if not wind, to be expected.

More than usual twinkling of the stars, indistinctness or apparent multiplication of the 'moon's horns, haloes, "wind-dogs" (fragments or pieces of rainbows, sometimes called "wind-galls"), seen on detached clouds, and the rainbow, are more or less significant of increasing wind, if not approaching rain, with or without wind.

Lastly, the dryness or dampness of the air, and its temperature (for the season) should *always* be considered, *with other* indications of change, or continuance of wind and weather.

On Barometer scales, the following contractions may be useful :—

RISE	FALL
FOR	FOR
N.E.LY	S.W.LY
(NW.-N.-E.)	(SE.-S.-W.)
DRY	WET
OR	OR
LESS	MORE
WIND.	WIND.
—	—
EXCEPT	EXCEPT
WET FROM	WET FROM
N.E.D.	N.E.D.

When the wind shifts against the sun,
Trust it not, for back it will run.

First rise after very low,
Indicates a stronger blow.

Long foretold—long last.
Short notice—soon past.

* Much refraction is a sign of easterly wind.

INSTRUCTIONS FOR THE CARE, FIXING, AND MANAGEMENT OF COAST BAROMETERS, AND EXPLANATION OF THE BAROMETER CHART.

By JAMES GLAISHER, Esq., F.R.S., ROYAL OBSERVATORY, GREENWICH.

PRECAUTIONS BEFORE USING THE BAROMETER.

BEFORE the barometer is fixed it should be examined, in order to ascertain whether the space above the mercury is free from air. This is done by inclining the instrument quickly from the vertical position, so that the mercury strikes against the upper part of the tube, which, if the space above the mercury be free from air, elicits a sharp tap ; but if air be present, either a dull sound is heard or no sound at all, proving the presence of air, which must be expelled by inverting the instrument and tapping it gently with the hand throughout its entire length.

Before inclining the barometer, it is necessary to withdraw the screw a little at the bottom of the instrument when held vertically in the hand, by applying the adjusting key to the projecting square pin* at the bottom, so that the mercury falls half an inch or one inch in the tube, and after examination, to drive the screw again gently so that the mercury again fills the tube.

TO FIX THE BAROMETER.

In fixing the barometer, care should be taken to select a good light, and, if possible, opposite to some north point. The back of the instrument should be fixed to a piece of wood terminating beyond it, both above and below, in pivots to work in corresponding sockets, unless the instrument itself be already pivoted, so that it can revolve, and be turned inwards for adjusting and reading, and outwards for exterior view at pleasure, keeping it perpendicular in all positions.

When the barometer is fixed, apply the key as before directed to the square head or projecting pin at the bottom, and turn it as far as possible, keeping the eye fixed on the top of the mercurial column in its downward course. The mercury in the tube will soon adjust itself to its proper level on removing the key, which should be at once placed in its usual position to adjust the vernier.

TO REMOVE THE INSTRUMENT WHEN FIXED TO ANOTHER POSITION.

If it should be necessary to remove the barometer, first by means of the adjusting screw, drive the mercury to the top of the tube, turning it gently when it is approaching the top, and cease directly any resistance is experienced ; next, remove the upper bracket or socket ; lift the instrument and invert it, carrying it with its lower end upwards.

* This pin is in some instruments first removed.

cap, which must then be

• THE SCALES OF BAROMETERS AND THEIR VERNIERS.

The scale of the barometer is divided into inches, and each inch is divided into ten parts; therefore each small division on the barometer scale is one-tenth of an inch.

A small scale, called a vernier, movable up and down along the edge of the barometer scale, by means of an adjusting key, is so made as to divide one of the small divisions of the barometer scale into as many parts as the vernier scale itself is divided into.

The vernier is divided into ten parts, numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and enables the reading of the barometer, or height of the mercurial column, to be taken to one-hundredth of an inch. In some barometers the alternate divisions on the vernier only are numbered—thus, 2, 4, 6, 8, 10; the zero and the odd or intermediate numbers being very readily inferred.

TO READ THE BAROMETER.

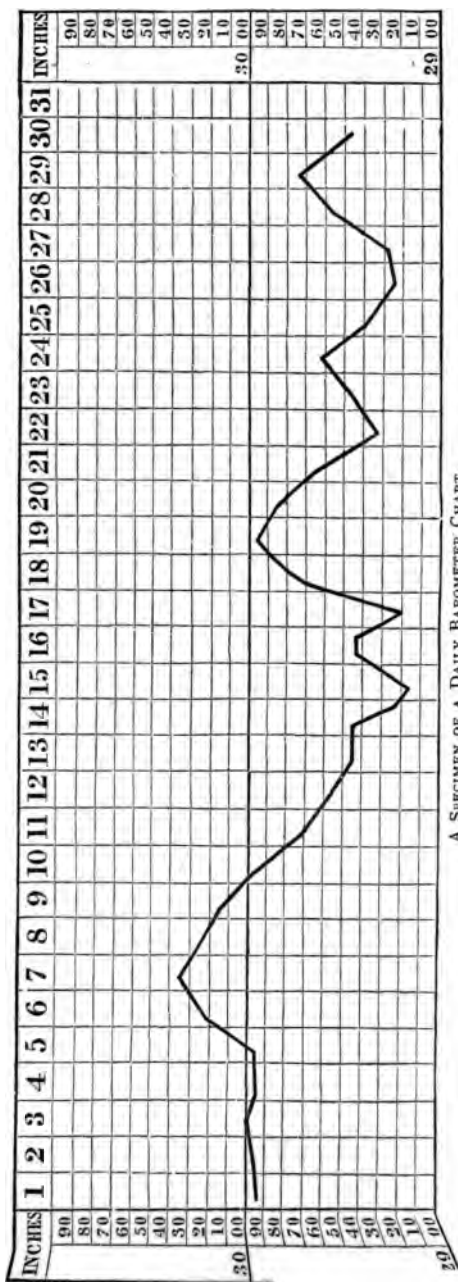
To read the barometer, first adjust the eye, by means of the fore and back part of the lower termination of the vernier, at an exact level, and while so placed, bring the lower part of the vernier to the apex or highest part of the mercurial column. Next look to the zero of the vernier, and see where it is placed with respect to the barometer scale. Suppose the zero line (the line next below that numbered 1 on the vernier) and the line 29.0 on the barometer scale to be in the same straight line, then the reading would be 29.00 in.; and in like manner, if the zero line be coincident with the barometer scale,

At 29.1	the reading would be	29.10
At 29.2	„	29.20
At 29.3	„	29.30

In the same manner all readings are to be taken when the vernier zero and a line on the barometer scale appear to be in the same straight line.

Now, suppose the zero line of the vernier not to be coincident with any line on the barometer, but to be situated between two of them, which will generally be the case, then some other line on the vernier will coincide with one on the barometer scale.

Suppose the zero of the vernier be between 29.50 and 29.60 on the barometer scale, this shows the reading is greater than 29.50, but not so large as 29.60; on looking up the vernier, suppose the line numbered 3 be found to be coincident with one on the barometer scale, this shows that 29.50 is to be increased by three-hundredths, and the reading would be 29.53 in. In like manner all readings would be taken when the vernier zero is situated between two lines on the barometer scale, namely, by increasing that reading of the barometer scale which is next below the zero of the vernier by that number on the vernier a continuation of whose line appears to pass through one of those on the barometer scale.



A SPECIMEN OF A DAILY BAROMETER CHART.

TIMES OF READING. THE BAROMETER AND LAYING THE POINTS ON
THE DIAGRAM OR CHART.

The barometer should be set regularly by an authorized person twice each day, say at nine o'clock in the morning and three o'clock in the afternoon.

On taking the reading every morning, a dot will be placed on a ruled scale, corresponding to the reading, and a line drawn from the last dot to the new one, and thus successively day by day from one point to the next, indicating to the eye the changes of the preceding days, as shown in the preceding diagram.

The diagram or chart annexed is for a November month. An inspection will show that, till the 5th day, the deviations from a horizontal line are very small; then there is an ascending line to the 7th, when the highest point in the month is reached; from this time till the 12th the barometer reading was constantly decreasing; on the 13th day there was scarcely any change; on the 14th, two points are laid down, as the reading decreased from 29'46 in., in the morning, to 29'28 in. in the evening; on the 15th, the lowest reading in the month took place; on the 16th, the reading was steady all day; it then decreased during the night to 29'20 in.; on the following morning, there was a rise of half an inch between the 17th and 18th; and the increase continued till the 19th; there was then a decrease to the 21st; and alternately an increase and decrease about the point 29'50 in., till the end of the month.

These charts should be publicly exposed side by side with the barometer, and thus remain till the seventh day of the following month. Any one looking at them would then at once see what the barometer readings had been, and the tendency of future weather.

If there were found but small deviations from a horizontal line, and the barometer reading still nearly the same, a fisherman would know that no change was probable, and would go out to fish without hesitation. If, on the other hand, he found the diagram exhibiting an ascending or descending line, he would know that there had been a progressive rise or fall, and comparing this with the then state, and with his local knowledge of the coast, he would be enabled to judge with much confidence whether fair or foul weather was to be expected, and consequently whether it would be prudent for him to go out or remain on shore.

Now, if day by day such curves be laid down, and be watched in connection with the foregoing directions and the Barometer Instructions, they will certainly tend to save many lives, and to preserve much valuable property from destruction.

A fisherman examining the state of the barometer need not notice the vernier at all; but may pass his eye at once from the top of the mercurial column to the barometer scale; or he may limit his observation to noticing whether there be a space between the mercury and the lower part of the vernier, or the projecting piece across the tube; if there be, it will show that the barometer reading has fallen since the regular observation: and if there be not, it will show that it has either continued stationary, or that it

is rising ; by which indications, in conjunction with the chart, he will accordingly be guided.

The habitual use of any instrument in the ordinary purposes of life too often engenders a neglect of the principles on which it acts, and among such instruments is the barometer, an instrument whose action depends on principles as beautiful as any in the whole range of natural science. I will therefore say a few words upon the principles of constructing a barometer, in addition to what has been already explained as to the use of the vernier, and how to read it in connection with the barometer scale.

The first step in such an inquiry must be connected with the atmosphere by which we are surrounded, and the variations of which, in weight, the barometer is designed to measure.

The atmosphere is an invisible elastic fluid, possessing, among other qualities, that of weight. To most persons it is a matter of wonder that air possesses weight. Yet if we reflect that clouds, which are composed of water, and therefore possess weight, are upheld by the air beneath, and which, therefore, must be mass for mass heavier than the clouds, we cannot fail to perceive that the air must possess weight. Again, we know a balloon with its car and heavy appendages ascends in air ; the only reason for this must be, that the bulk of atmospheric air is heavier than an equal bulk of gas which is contained in the balloon, in addition to the weight of the balloon itself and its appurtenances. It is not easy to weigh air, yet it has been done ; and the weight of 100 cubic inches of air, when the barometer reads 30 inches and the thermometer stands at 60 degrees, is found to be about 31 grains.

This is about one eight hundred and fifteenth the weight of the same bulk of water, and therefore air is about eight hundred and fifteen times lighter than water. Air thus possessing weight, it follows that that portion nearest to the surface of the earth is pressed by all that which is above.

If we take a glass tube nearly 3 feet in length, closed at one end, filled quite full of mercury, and then place the open end into a basin of mercury, preventing the admission of air into the tube, by covering the open end with the finger till it is covered by the mercury in the basin, then on removing the finger and placing the tube vertically, the mercury in the tube will sink to the height of about 30 inches above that in the basin. Now the mercury in the basin within the tube is pressed by a column of mercury 30 inches high, and on every other part outside the tube by the atmosphere above it, and these two balance each other. The weight of the column of mercury in the tube can be weighed, and it will be found that if a column of mercury one inch square and 30 inches high be weighed, it will be about 14½ lbs., and therefore a column of air one inch square, and reaching from the earth to the top of the atmosphere, will weigh about 14½ lbs.

As the mercury in the tube exactly balances the pressure of the atmosphere, this height will vary in proportion to its variations in pressure, and the height of the mercurial column in this climate is found to vary from less than 28 inches to 31 inches at the sea-level.

The essential part of every barometer is a glass tube filled with mercury ;

all the other parts of a barometer are conveniences to determine accurate the height of the column of mercury in the tube above the surface of the mercury in the basin or cistern. In filling the tube much care and many precautions are necessary, and the mercury must be boiled in the tube itself throughout its whole length.

In all the coast barometers supplied to the NATIONAL LIFE-BOAT INSTITUTION, the whole of the above-stated precautions are taken. They are carefully examined by myself, and are not passed for use till these readings agree with those of the standard at the Royal Observatory, Greenwich, which instrument reads in accordance with the flint-glass barometer of the ROYAL SOCIETY.



LIFE-SAVING HAMMOCKS AND MATTRESSES.

ADMIRAL RYDER has persistently urged on the Admiralty the great advantage that would accrue if the hammocks in ships of war were made to serve as life-buoys, in the event of a ship suddenly foundering ; more especially as in future naval wars it is probable that such catastrophes will be of much more frequent occurrence than formerly, consequent on the general introduction of torpedoes and of steam-rams.

By the adoption of a cork mattress, a naval hammock can be readily and quickly converted into an efficient life-buoy which will support one man buoyantly, with his breast and shoulders well above the water's surface, without depriving him of the power of locomotion ; whilst it would support three men in an upright position, with their heads and faces above water.

As such mattresses can also be made much more cheaply than those stuffed with hair, and are as comfortable to sleep on, it would seem that there need be no impediment to their general use in the Royal Navy.

The most effectual mode of using such beds as life-buoys would be to bend the hammock as lashed up and stowed in the netting, bringing the two ends together and securing them by the ordinary laniards, by which the hammocks are hung up when slept in, thus forming a large life-buoy, shaped somewhat like a horse-collar, leaving the ends about eighteen inches apart, when the form will be that of a horse-shoe, as shown in fig. 1.



FIG. 1.—HAMMOCK FOLDED READY FOR USE AS A LIFE-PRESERVER.

On a catastrophe occurring, each man would then take a hammock from the netting where they were stowed, and bending it *backwards*, so as to tighten the lashing, would secure the ends by the clues and laniards, and jumping overboard with it under his arms, he would be able to swim with it clear of the ship, and to support himself on it until help should arrive.

The sketch (fig. 2) shows the manner in which a man would support and propel himself with the aid of the hammock-buoy :—



FIG. 2.—MAN SWIMMING WITH HAMMOCK.

Another mode in which the hammocks might be used advantageously, and which has also been proved by experiment, is by lashing two hammocks together at the ends, about twenty inches apart, so that two, or even three persons, placing themselves between them, with one arm over each hammock, and facing the same end, could strike out with their legs as in swimming, and thus propel themselves through the water, as shown in the sketch, fig. 3 :—

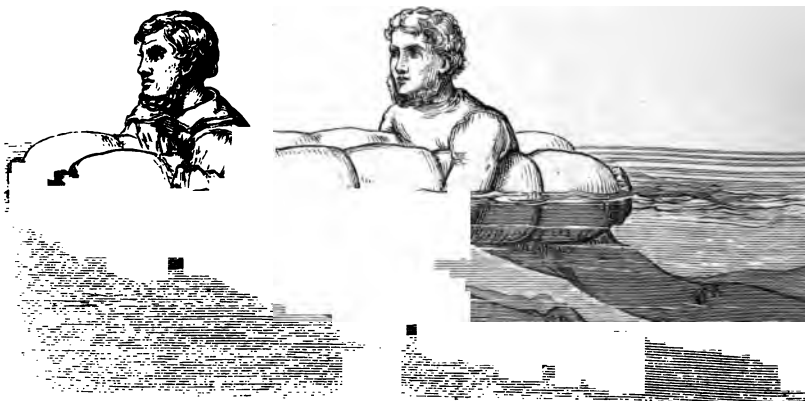


FIG. 3.—TWO MEN SWIMMING BETWEEN TWO HAMMOCKS.

This mode of using the hammocks might, under some circumstances, be of great advantage, as two men might in this manner proceed several miles through the water in a few hours, and might even convey intelligence of a catastrophe to the nearest port or to a distant vessel, where assistance might be obtained.

It is not, however, contemplated to confine the use of cork mattresses to the Royal Navy, for they might undoubtedly be made instrumental to the saving of many lives in merchant vessels where those on board are unprovided with life-belts. Since, however, merchant seamen are not usually provided with hammocks, but sleep in berths, or bed-places, a different arrangement has necessarily to be adopted. Messrs. BIRT have therefore designed and patented a special form of mattress, which can be so secured round the body, close under the arms, as to form a life-belt.

To effect this the mattress is divided, longitudinally, into two distinct parts, but united by the linen covering on one side, so that the two parts will fold back, as on a hinge, and thus be doubled and reduced to half the original width.

The sketches (figs. 4 to 9) will give a correct idea of their character, and of the manner in which they would be worn :—



FIG. 4.—CORK MATTRESS.

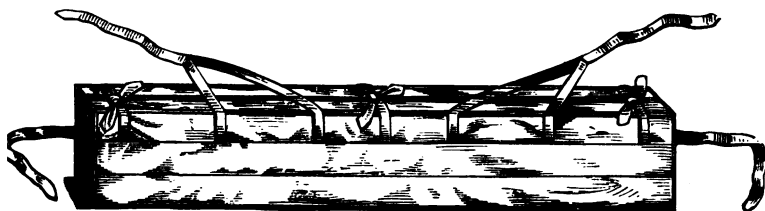


FIG. 5.—MATTRESS FOLDED READY FOR USE AS A LIFE-PRESERVER.

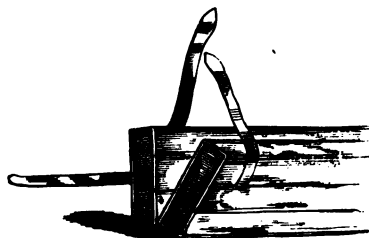


FIG. 6.—SECTION OF MATTRESS—END VIEW.



FIGS. 7 AND 8.—VIEW OF MATTRESS WHEN ON—FRONT AND BACK.



FIG. 9.—MAN SWIMMING WITH MATTRESS.

Cushions for the deck and cabin seats in passenger-vessels, yachts, and pleasure-boats of all kinds, are also made in the same manner, each cushion being of the width of one fold of a mattress.

These mattresses and cushions have only to be seen to convince any one of their fitness for the purpose for which they are intended; and their general adoption for the purposes above indicated cannot fail to lead to the saving of a large number of lives.

In proof of their ample buoyancy, it may be stated that the buoyancy of a single hammock mattress (fig. 1) is equivalent to sixty pounds, as it will float an iron weight of that amount ; that of the larger mattress (fig. 4) is about seventy-five pounds ; whilst the buoyancy of the best description of cork life-belts, or life-jackets, as provided to the crews of Life-boats, is only from twenty-three to twenty-seven pounds.

The cork with which they are filled is ground or granulated by machinery, and after the dust is removed the grains are of small size, which gives the mattresses a soft and elastic surface. Rib pieces are then inserted to prevent the cork from shifting. It also absorbs so little water that a mattress which has been immersed for twenty-four hours has at the end of that time lost but little of its buoyancy.

A great inducement to adopt these mattresses would also be found in the fact, that even the most expensive of them, namely, those costing 11*s.* 6*d.* each, cost less than half of what they would do if made of horsehair. Those with the commonest description of covering can be had for 7*s.* 6*d.* each ; and their buoyancy, and therefore their practical utility as life-buoys, is the same as that of the more expensive kinds.



DIRECTIONS FOR RESTORING THE APPARENTLY DROWNED.

THE leading principles of the following directions for the restoration of the apparently dead from drowning, are founded on those of the late Dr. MARSHALL HALL, combined with those of Dr. H. R. SILVESTER, and are the result of extensive inquiries which were made by the ROYAL NATIONAL LIFE-BOAT INSTITUTION in 1863-4, amongst medical men, medical bodies, and coroners throughout the United Kingdom. These directions have been extensively circulated by the Institution throughout the United Kingdom and in the Colonies. They are also in use in Her Majesty's fleet, in the Coastguard service, and at all the stations of the British army at home and abroad.

I.

Send immediately for medical assistance, blankets, and dry clothing, but proceed to treat the patient *instantly* on the spot, in the open air, with the face downward, whether on shore or afloat; exposing the face, neck, and chest to the wind, except in severe weather, and removing all tight clothing from the neck and chest, especially the braces.

The points to be aimed at are—first and *immediately*, the RESTORATION OF BREATHING; and secondly, after breathing is restored, the PROMOTION OF WARMTH AND CIRCULATION.

The efforts to *restore Breathing* must be commenced immediately and energetically, and persevered in for one or two hours, or until a medical man has pronounced that life is extinct. Efforts to promote *Warmth* and *Circulation*, beyond removing the wet clothes and drying the skin, must not be made until the first appearance of natural breathing; for if circulation of the blood be induced before breathing has recommenced, the restoration to life will be endangered.

II.—TO RESTORE BREATHING.

To Clear the Throat.—Place the patient on the floor or ground with the face downwards, and one of the arms under the forehead, in which position all fluids will more readily escape by the mouth, and the tongue itself will fall forward, leaving the entrance into the windpipe free. Assist this operation by wiping and cleansing the mouth.

If satisfactory breathing commences, use the treatment described below to promote Warmth. If there be only slight breathing—or no breathing—or if the breathing fail, then—

To Excite Breathing.—Turn the patient well and instantly on the side, supporting the head, and excite the nostrils with snuff, hartshorn, and smelling salts, or tickle the throat with a feather, &c., if they are at hand. Rub the chest and face warm, and dash cold water, or cold and hot water

alternately, on them. If there be no success, lose not a moment, but instantly—

I.—INSPIRATION.



To Imitate Breathing.—Replace the patient on the face, raising and supporting the chest well on a folded coat or other article of dress.

Turn the body very gently on the side, and a little beyond, and then briskly on the face, back again, repeating these measures cautiously, efficiently, and perseveringly, about fifteen times in the minute, or once every four or five seconds, occasionally varying the side.

[By placing the patient on the chest, the weight of the body forces the air out ; when turned on the side, this pressure is removed, and air enters the chest.]

2.—EXPIRATION.



The foregoing two Illustrations show the position of the Body during the employment of Dr. Marshall Hall's Method of Inducing Respiration.

On each occasion that the body is replaced on the face, make uniform but efficient pressure with brisk movement, on the back between and below the shoulder-blades or bones on each side, removing the pressure immediately before turning the body on the side.

During the whole of the operations let one person attend solely to the movements of the head and of the arm placed under it.

[The first measure increases the expiration—the second commences inspiration.]

** The result is *Respiration* or *Natural Breathing*; and, if not too late, *Life*.

Whilst the above operations are being proceeded with, dry the hands and feet, and as soon as dry clothing or blankets can be procured, strip the body, and cover or gradually reclothe it, but taking care not to interfere with the efforts to restore breathing.

III.

Should these efforts not prove successful in the course of from two to five minutes, proceed to imitate breathing by Dr. SILVESTER's method, as follows:

Place the patient on the back on a flat surface, inclined a little upward from the feet; raise and support the head and shoulders on a small firm cushion or folded article of dress placed under the shoulder-blades.

I.—INSPIRATION.



Draw forward the patient's tongue, and keep it projecting beyond the an elastic band over the tongue and under the chin will answer thi

purpose, or a piece of string or tape may be tied round them, or by raising the lower jaw, the teeth may be made to retain the tongue in that position. Remove all tight clothing from about the neck and chest, especially the braces.

To Imitate the Movements of Breathing.—Standing at the patient's head, grasp the arms, just above the elbows, and draw the arms gently and steadily upwards above the head, and keep them stretched upwards for two seconds. (*By this means air is drawn into the lungs.*) Then turn down the patient's arms, and press them gently and firmly for two seconds against the sides of the chest. (*By this means air is pressed out of the lungs.*)

Repeat these measures alternately, deliberately, and perseveringly, about fifteen times in a minute, until a spontaneous effort to respire is perceived, immediately upon which cease to imitate the movements of breathing, and proceed to INDUCE CIRCULATION AND WARMTH.

2.—EXPIRATION.



The foregoing two Illustrations show the position of the Body during the employment of Dr. Silvester's Method of inducing Respiration.

IV.—TREATMENT AFTER NATURAL BREATHING HAS BEEN RESTORED.

To Promote Warmth and Circulation.—Commence rubbing the limbs upwards, with firm grasping pressure and energy, using handkerchiefs, flannels, &c. [*By this measure the blood is propelled along the veins towards the heart.*]

The friction must be continued under the blanket or over the dry clothing.

Promote the warmth of the body by the application of hot flannels, bottles, or bladders of hot water, heated bricks, &c., to the pit of the stomach, the arm-pits, between the thighs, and to the soles of the feet.

If the patient has been carried to a house after respiration has been restored, be careful to let the air play freely about the room.

On the restoration of life, a teaspoonful of warm water should be given and then, if the power of swallowing have returned, small quantities of wine, warm brandy-and-water, or coffee should be administered. The patient should be kept in bed, and a disposition to sleep encouraged.

GENERAL OBSERVATIONS.

The above treatment should be persevered in for some hours, as it is an erroneous opinion that persons are irrecoverable because life does not soon make its appearance, persons having been restored after persevering for many hours.

APPEARANCES WHICH GENERALLY ACCOMPANY DEATH.

Breathing and the heart's action cease entirely ; the eyelids are generally half closed ; the pupils dilated ; the tongue approaches to the under edge of the lips, and these, as well as the nostrils, are covered with a frothy mucus. Coldness and pallor of surface increase.

CAUTIONS.

Prevent unnecessary crowding of persons round the body, especially if in an apartment.

Avoid rough usage, and do not allow the body to remain on the back unless the tongue is secured.

Under no circumstances hold the body up by the feet.

On no account place the body in a warm bath unless under medical direction, and even then it should only be employed as a momentary excitant.

*** Large placards of these Instructions, with Illustrations printed thereon can be supplied by Messrs. CLOWES & SONS, Printers, Charing Cross, London, at a cost little beyond the actual price of the paper on which they are printed, namely Six Shillings per 100 Copies.*



MERCHANT SHIPPING ACTS AMENDMENT ACT, 1873.

(From the *Life-boat Journal* for February 1874.)

IN the year 1854 the great Merchant Shipping Act was passed, which was a substitute for all previous Acts, and which, with certain subsequent amendments, passed in 1855, 1856, 1862, and 1871, has since constituted the law for the regulation of our merchant shipping and merchant seamen. We, at that time, remarked on its several provisions, in a series of papers in our 14th, 15th, and 17th numbers, and pointed out what we considered some of its shortcomings and inconsistencies, but, at the same time, stated that, in our opinion, "it embodied a most comprehensive system of legislation for all the vast and varied interests involved in the immense shipping trade of this country;" and, having special reference to that part of the subject allied to the objects of this Institution, we observed that, "amongst the many enactments contained in it for the protection and welfare of seamen, and of passengers when on shipboard, there were several, the objects of which were, or the effect of which would be, to afford increased security to life in case of Shipwreck or other disaster at sea."

In 1869 a new Merchant Shipping Bill was prepared, to be termed the Merchant Shipping Act, 1870, but other and more urgent matter for legislation has, from then until now, occupied the attention of Parliament, and the Bill has not yet been considered by it.

Another Amendment Act was, however, passed by the Legislature in August, 1873. It may be considered, however, only an intermediate measure to meet some of the more pressing requirements of the Mercantile Marine until the comprehensive Bill of 1870 can be again brought forward.

The 1st and 2nd sections define the Act as the "Merchant Shipping Act, 1873," but state that the Merchant Shipping Act, 1854, and its subsequent amendments, together with this one, may be cited collectively as the Merchant Shipping Acts, 1854 to 1873. The 3rd section provides —

Firstly, that every British ship shall, before registry, have her name permanently and conspicuously marked on each of her bows, and her name, and that of the port of her registry, on her stern.

Secondly, that her official number, and the number denoting her registered tonnage, shall be cut on her main beam.

Thirdly, that a scale of feet denoting her draught of water shall be cut in and conspicuously painted in Roman capital letters, or in figures, not less than six inches in length, on each side of the stem and stern post, the lower line of such letters or figures denoting the draught line.

Fourthly, that the owner of any ship will be liable to a penalty of 100l.

if the scale of feet showing the ship's draught of water is, in any respect inaccurate, so as to be likely to mislead, or if he neglect to have his ship marked as aforesaid, or suffer any person under his control to conceal, remove, alter, deface, or obliterate any of the said marks, except for the purpose of escaping capture by an enemy.

As regards the first requirement of this section, there could not be a more striking illustration of the importance of having the name of every vessel conspicuously painted on her than that afforded by the, for ever infamous conduct of the captain of the Spanish ship *Murillo*, in deserting the drowning crew and passengers of the *Northfleet*, after running into and sinking that unfortunate vessel on the night of the 15th of January, 1873.

And so, also, as regards the second requirement, it is highly advantageous that a vessel should have, as it were, an official seal, certifying to her identity and her carrying capacity.

It is like the "Certificate of Baptism," or the "Registry of Birth," in the case of the human being, which can be referred to at any time to testify to identity.

The third requirement, which states that the draught of water of any vessel shall be visible at all times, through a scale of feet being cut and painted both on the stem and stern posts, we consider of great importance. For a long period it has been customary to mark a scale of feet on the stem and stern posts of ships of war; and many merchant vessels had the same although not by compulsion, previously to the Amendment Act, 1871, to the manifest advantage of those on board them, that they might at all time be able to ascertain their exact draught of water, and trim.

The chief importance of this requirement, however, now is, that, taken with the comparative freeboard or height of the upper part of the hull above the surface of the water, it is at once a visible indication as to whether or not a loaded ship is overladen; so that if she should appear to be so the authorities of the port from which she sails may have their attention directed to the circumstance, although they may not have received any official complaint of the same from her crew.

That there is every need for increased vigilance on the part of the Government authorities to prevent the crime of overlading is only too certain. Long before Mr. PLIMSOLL drew general attention to the subject the NATIONAL LIFE-BOAT INSTITUTION did so in its journal, and in the number for July, 1867, in an article on 'Overladen and Unseaworthy Ships,' will be found an account of the loss of the *Utopia*, a ship of nearly 1000 tons which, in defiance of all the authorities of Liverpool, sailed from that port on the 10th of March of that year for Bombay, so overladen and leaky that only three days afterwards she had to be abandoned by her master and crew at the very moment of foundering, when they had a narrow escape of their lives. This was one of the most disgraceful cases on record, and there was no more so as the owners of the ship themselves superintended her departure knowing at the time her unseaworthy condition, and that she was not, in

her then overladen and leaky state, fit to cross the Irish Channel, far less to start on a voyage to India. And let it not be thought that such cases will not occur continually if they be not prevented by the strong arm of the law, for so long as cupidity is inherent in many natures, and the temptation exists to increase the profit on a voyage by loading to the extreme limit of safety, and even beyond it, there will be many unprincipled men who will yield to its baleful influences, heedless of the risk to the lives of the poor men who work their ships. Just as there are men, calling themselves Englishmen and Christians, who are ready at any moment to sell arms and ammunition to the enemies of their country, in times of war, to be employed in destroying the lives of their own countrymen.

It is hoped that this scale of feet at stem and stern, coupled with the power of inquiry and examination by the officers under the Board of Trade, may be found sufficient to check the infamous and dastardly custom of habitual overloading; and tend to prevent any more *Utopias* from disgracing the British flag and name.

The 4th section provides that the record of the draught of water of any sea-going ship, required under section five of the Merchant Shipping Act, 1871, shall, in addition to the particulars thereby required, specify the extent of her "clear side" in feet and inches; and it defines the term "clear side" to mean the height from the water to the upper side of the plank of the deck from which the depth of hold, as stated in the register, is measured, the measurement being taken from the lowest part of the side.

The third clause of the section requires the master of every sea-going ship to permit any person appointed to record the ship's draught of water, to enter the ship, and make such inspections, and take such measurements, as may be requisite.

The 5th section prohibits the registry of any foreign ship becoming a British one, by any other name than that it had previously had, unless with the express sanction of the Board of Trade, as directed by section 6 of the Merchant Shipping Act, 1871, and affixes a penalty not exceeding 100*l.*, for acting in contravention of the same.

The 6th section provides that when any British ship, by reason of having been wrecked or abandoned, or for any reason save capture by the enemy, or transfer to a person not qualified to own a British ship, shall have ceased to be registered as a British ship, she shall not be re-registered as one until she has been surveyed by one of the surveyors appointed by the Board of Trade, and certified by him to be sea-worthy.

This provision is undoubtedly a very necessary one.

The five following sections, from the 7th to the 11th, are connected with the agreements between masters and seamen, and the owners of vessels.

The only one of them calling for comment is the 9th, which provides that, "if a seaman or apprentice of any ship be detained on a charge of desertion, or any kindred offence, and if on a survey of the ship being made, under section 7 of the Merchant Shipping Act, 1871, it be proved that she is not in a fit condition to proceed to sea, or that her accommodation is insufficient, the owner or master of the ship shall be liable to pay

such seaman or apprentice such compensation for his detention as the Court, having cognizance of the proceedings, may award."

We think that such protection to the seamen who find themselves on board unseaworthy vessels has been long needed. On the one hand the custom of paying wages in advance, which induces bad men to desert their vessels and thus rob their employers, should be discontinued; but on the other, no such disgraceful thing should any longer be possible, as that men should be sent to gaol and treated as criminals, because they should refuse to go to sea in overladen, leaky, or other unseaworthy craft, at great peril to their lives. If it be deemed a convenient way to get rid of the scum of our population, and of the wild, turbulent, and restless spirits which dwell in all communities, to send them to sea to be drowned, well and good, only let the same be clearly understood. But if, on the other hand, it be thought desirable that service in our grand merchant navy shall be looked on as a respectable employment, and that those men, who visit all lands, whose example is for good or ill wheresoever they go, and who bring credit or discredit on the British name, should conduct themselves as respectable Christian men and not as savages; why, then, let every means be taken to make the service attractive and respectable—to improve those men already in it—and to lead them to respect themselves and to desire the respect of others.

The next series of sections, ranging from the 12th to the 28th, fall under the heading of "Safety and Prevention of Accidents."

Section 12 is a very important one. It provides—

"That when the Board of Trade has received a complaint, or has reason to believe that any British ship is, by reason of the defective condition of her hull, equipments, or machinery, or by reason of overloading, improper loading, unfit to proceed to sea without serious danger to human life, it may, if it think fit, appoint some competent person or persons to survey such ship, and the equipments, machinery, and cargo thereof, and report thereon to the Board."

That "Any person so appointed may, for the purposes of such survey, require the unloading or removal of any cargo, ballast, or tackle, and shall have all the powers of an inspector appointed under the Merchant Shipping Act, 1854."

Also that, "Any person having notice of such survey who shall wilfully do any act to obstruct or prevent the same, shall be liable to a penalty not exceeding 50*l*."

It empowers the Board of Trade to order the detention of any ship for the purpose of such survey, and authorizes any officer of Customs to detain her until her release be ordered either by the Board of Trade or by any Court to which an appeal is given under the Act. And it further empowers the Board to detain such ship either absolutely or on the performance of such conditions as it might think necessary to impose, in the event of the surveyor's report being such that, in the opinion of the Board, the ship could not proceed to sea without serious danger to human life.

As stated above, we consider this section of the Act a most important

one. If the Board of Trade are fortunate in obtaining the services of independent and experienced men, who will fearlessly and effectually discharge the difficult and onerous duty imposed on them, its effect we may hope will be to sweep our unseaworthy ships from the sea, and whilst it will strike terror into the hearts of evil-doers, that it will, at the same time, prevent the necessity of any general system of inspection or espionage, which would be inconvenient and vexatious to the general body of ship-owners, who would never, intentionally, send an unseaworthy vessel to sea.

The 13th section specifies by whom the expenses of such surveys shall be paid. If the ship surveyed should be found unfit to proceed to sea without serious danger to human life, that the expenses incurred by the Board of Trade in respect of the survey shall be paid by the owner of the ship, and be recoverable in the same manner as salvage is so. If not found unfit, that they shall be paid by the Board of Trade.

It also empowers the Board, on a complaint being made to it that a ship is unfit to proceed to sea, to require the complainant to give such security as they might deem sufficient for the payment of any costs and expenses for which the Board might become liable, and makes the same recoverable by the Board should it appear that the complaint had been made without sufficient reason. This clause will effectually prevent frivolous or malicious complaints being made as to unseaworthiness, &c.

The 14th section specifies the Courts to which a shipowner may appeal if dissatisfied with any order made by the Board after a survey, viz:—

“In England, to any Court having Admiralty Jurisdiction.

“In Ireland, to any Court having Jurisdiction under the Court of Admiralty (Ireland) Act, 1867.

“In Scotland, to the Court of the Sheriff of the County.”

The 15th section authorises the Board of Trade to sanction, at the request of the owner, a reduction in the number, and a variation in the dimensions, of the boats required for the ship by section 292 of the Merchant Shipping Act, 1854, and also the substitution of rafts or other appliances for saving life for any such boats; so, nevertheless, that the boats so reduced or varied, and the rafts, &c., so substituted should be sufficient for the persons carried on board the ship.

Section 16 is of great importance. It is as follows:—“In every case of collision between two vessels it shall be the duty of the master or person in charge of each vessel, if and so far as he can do so without danger to his own vessel, crew, and passengers (if any), to stay by the other vessel until he has ascertained that she has no need of further assistance, and to render to the other vessel, her master, crew, and passengers (if any), such assistance as may be practicable, and as may be necessary, in order to save them from any danger caused by the collision; and also to give to the master or person in charge of the other vessel the name of his own vessel, and of her port of registry, or of the port or place to which she belongs, and also the names of the ports and places from which she has come and to which she is bound.

“If he fail so to do, and no reasonable cause for such failure be shown,

the collision shall, in the absence of proof to the contrary, be deemed to have been caused by his wrongful act, neglect, or default.

"Every master or person in charge of a British vessel who fails, without reasonable cause, to render such assistance, or give such information as aforesaid, shall be deemed guilty of a misdemeanour, and, if he is a certificated officer, an inquiry into his conduct may be held, and his certificate may be cancelled or suspended."

It was time that such an enactment as that contained in this section should be made; for although the case of the running down of the emigrant ship, *Northfleet*, already referred to, was no doubt the immediate cause of its introduction into this "Amendment Act," if it was not indirectly the cause of the Act itself, yet too many cases of heartless desertion, although with less disastrous consequences, have from time to time occurred, and it can only be matter of surprise that the desertion of one ship by another, under such circumstances, has not long since been made a punishable offence.

Sections 18 to 21, together with two schedules to the Act, define the character of the signals to be shown by vessels in distress and needing assistance, and by those requiring pilots, and prohibit the use of such signals for any other object, and make those who misuse them liable for any expenses occasioned thereby. They are as follows :—

"18. The signals specified in the First Schedule to this Act shall be deemed to be signals of distress.

"Any master of a vessel who uses or displays, or causes or permits any person under his authority to use or display, any of the said signals, except in the case of a vessel being in distress, shall be liable to pay compensation for any labour undertaken, risk incurred, or loss sustained in consequence of such signal having been supposed to be a signal of distress, and such compensation may, without prejudice to any other remedy, be recovered in the same manner in which salvage is recoverable.

"19. If the vessel requires the services of a pilot, the signals to be used and displayed shall be those specified in the Second Schedule to this Act.

"Any Master of a vessel who uses or displays or causes or permits any person under his authority to use or display, any of the said signals, for any other purpose than that of summoning a pilot, or uses, or causes, or permits any person under his authority to use any other signal for a pilot, shall incur a penalty not exceeding 20*l*.

"20. Her Majesty may, from time to time, by Order in Council, repeal or alter the rules as to signals contained in the schedules to this Act, or make new rules in addition thereto, or in substitution therefore, and any alterations in, or additions to, such rules made in manner aforesaid, shall be of the same force as the rules in the said schedules.

"21. Any shipowner who is desirous of using for the purposes of a private code, any rockets, lights, or other similar signals, may register such signals with the Board of Trade, and the Board shall give public notice of the signals so registered in such manner as they may think requisite for preventing such signals from being mistaken for signals of distress or signals for pilots.

"The Board may refuse to register any signals which, in their opinion, cannot easily be distinguished from signals of distress or signals for pilots.

"When any signal has been so registered, the use or display thereof by any person acting under the authority of the shipowner in whose name it is registered shall not subject any person to any of the penalties or liabilities by this Act imposed upon persons using or displaying signals improperly.

"22. If the managing owner, or, in the event of there being no managing owner, the ship's husband of any British ship have reason, owing to the non-appearance of such ship, or to any other circumstance, to apprehend that such ship has been wholly lost, he shall, as soon as conveniently may be, send to the Board of Trade notice in writing of such loss, and of the probable occasion thereof, stating the name of the ship and her official number (if any), and the port to which she belongs, and if he neglect to do so within a reasonable time, he shall incur a penalty not exceeding 50*l*."

In the number of the Lifeboat Journal for August, 1873 (No. 89), we published the system of signals of distress and for pilots contained in the two schedules of this Act, together with our own comments on them ; we need not, therefore, now repeat them.

Sections 23 to 28 forbid any person, not the master or owner, sending or carrying by any vessel, British or Foreign, any dangerous goods, such as aquafortis, vitriol, naphtha, benzine, gunpowder, lucifer matches, nitro-glycerine, and petroleum, without distinctly marking their nature on the outside of the package containing the same and giving written notice of the nature of such goods, and of the name and address of the sender or carrier thereof, to the master or owner of the vessel, at or before the time of sending the same to be shipped. They also attach certain penalties, which may amount to 100*l*., for wilful infringement of this law, and to 500*l*. if accompanied by false descriptions of the goods or of the sender or carrier thereof. And in certain cases authorize the forfeiture of the goods in question.

The remaining sections of the Act are of a miscellaneous character.

As above remarked, we had considered there were shortcomings and inconsistencies in the Merchant Shipping Act of 1854. So, doubtless, there are in this Amended Act of 1873. And so there will be in future Shipping Acts ; for what is there that is perfect and yet human ? We are, however, despite all our reforms and reformers, a conservative people, and have for a long period preferred cautious rather than precipitate legislation, and have been content patiently to endure many imperfections and admitted evils until they could be safely dealt with, rather than to waste time and energy in useless and hasty efforts to attain an impossible perfection. Hence our advances in this, as in other and even more important objects of legislation, have been attained slowly and deliberately, step by step, yet with unfailing certainty, moved by the opposing influences of the progressive and conservative elements in our constitutional and representative political system.

**PATRON, VICE-PATRON, PRESIDENT, VICE-PRESIDENTS, AND
OTHER OFFICERS OF THE INSTITUTION.**

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In 1863, H.R.H. the PRINCE OF WALES became its Vice-Patron.

His Grace the DUKE OF NORTHUMBERLAND, P.C., was elected in 1860 its President, in succession to the late ALGERNON, Fourth DUKE OF NORTHUMBERLAND.

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† These gentlemen are likewise Trustees of the Institution.

LIST OF THE TWO HUNDRED AND FORTY-TWO LIFE-BOAT STATIONS UNDER THE MANAGEMENT OF THE INSTITUTION.

ENGLAND.

NORTHUMBERLAND — Berwick-on-Tweed — Holy Island (two boats) — North Sunderland — Boulmer — Alnmouth — Hauxley — Cresswell — Newbiggin — Blyth (two boats) — Cullercoats — Tynemouth (two boats)

DURHAM — Whitburn — Sunderland (four boats) — Seaham — West Hartlepool (two boats) — Seaton Carew

YORKSHIRE — Middlesborough — Redcar — Saltburn — Runswick — Uppang — Whitby (two boats) — Scarborough — Filey — Flamborough (two boats) — Bridlington — Hornsea — Withernsea

LINCOLN — Cleethorpes — Donna Nook — Theddlethorpe — Sutton — Chapel — Skegness

NORFOLK — Hunstanton — Brancaster — Wells — Blakeney — Sheringham — Cromer — Mundesley — Bacton — Hasborough — Palling (two boats) — Winterton — Caister (two boats) — Yarmouth (two boats)

SUFFOLK — Gorleston — Corton — Lowestoft (two boats) — Pakefield (two boats) — Kessingland (two boats) — Southwold (two boats) — Dunwich — Thorpeness — Aldborough

KENT — Margate — Kingsgate — Broadstairs — Ramsgate — North Deal — Walmer — Kingsdowne — Dover — New Romney — Dungeness

SUSSEX — Rye — Winchelsea — Hastings — Eastbourne — Newhaven — Brighton — Shoreham — Worthing — Selsey — Chichester Harbour

HAMPSHIRE — Hayling Island

ISLE OF WIGHT — Bembridge — Brighstone Grange — Brooke

ALDERNEY — St. Anne

GUERNSEY — St. Samson's

DORSET — Poole — Chapman's Pool — Kimeridge — Weymouth — Lyme Regis

SOUTH DEVON — Sidmouth — Exmouth — Teignmouth — Brixham — Salcombe — Plymouth

CORNWALL — Looe — Fowey — Mevagissey — Portloe — Falmouth — Porthoustock — Cadgwith — Lizard Mullion — Porthleven — Penzance — Sennen Cove — Scilly Isles — St. Ives — Hayle — New Quay — Padstow — Port Isaac — Bude

NORTH DEVON — Clovelly — Appledore (two boats) — Braunton — Morte Bay — Ilfracombe — Lynmouth

SOMERSET — Watchet — Burnham

CHESHIRE — New Brighton — do. Tubular

LANCASHIRE — Southport — Lytham — Blackpool — Fleetwood — Piel

CUMBERLAND — Whitehaven — Maryport — Silloth

ISLE OF MAN — Ramsey — Douglas (two boats) — Castletown

WALES.

GLAMORGANSHIRE — Penarth — Porthcawl — Swansea

CARMARTHENSHIRE — Pembrey — Carmarthen Bay

PEMBROKESHIRE — Tenby — Milford — Solva — St. David's — Fishguard (two boats)

CARDIGANSHIRE — Cardigan — New Quay — Aberystwith

MERIONETHSHIRE — Aberdovey — Barmouth

CARNARVONSHIRE — Portmadoc

LIST OF THE TWO HUNDRED AND FORTY-TWO LIFE-BOAT STATIONS UNDER THE MANAGEMENT OF THE INSTITUTION—*continued.*

Abersoch—Porthdinllaen — Orme's Head

ANGLESEY—Llanddwyn—Rhos-neigr — Rhoscolyn — Holyhead — Cemaes—Bull Bay—Moelfre—Penmon

DENBIGHSHIRE—Llanddulas

FLINTSHIRE—Rhyl (Tubular)

SCOTLAND.

KIRCUDBRIGHT—Kircudbright

WIGTONSHIRE — Whithorn — Port Logan

AYRSHIRE — Ballantrae—Girvan

—Ayr—Troon—Irvine—Ardrossan

ISLE OF ARRAN—Kildonan

ARGYLLSHIRE—Campbeltown—Southend

CAITHNESS-SHIRE—Thurso

ORKNEY ISLANDS—Longhope—Stromness

ELGINSHIRE—Lossiemouth

BANFFSHIRE—Buckie—Banff

ABERDEENSHIRE — Fraserburgh — Peterhead

KINCARDINESHIRE—Stonehaven

FORFAR—Montrose (two boats)

—Arbroath — Buddon Ness and Broughty Ferry (Dundee)

FIFESHIRE—St. Andrews—Arstruther

HADDINGTONSHIRE—North Berwick—Dunbar

IRELAND.

CO. LONDONDERRY—Greencastle

ANTRIM—Portrush

DOWN — Groomsport — Ballywalter—Tyrella—Newcastle (Dundrum Bay)

LOUTH — Dundalk — Drogheda (two boats)

DUBLIN—Skerries—Rogerstown

—Howth—Poolbeg—Kingstown

WICKLOW — Greystones—Wicklow—Arklow

WEXFORD — Courtown—Cabore

Wexford (two boats)—Carnsore—Duncannon

WATERFORD — Tramore—Dunbarvan—Ardmore

CORK — Youghal—Ballycotton—Queenstown—Courtmacsherry

KERRY—Valentia

Total, 242 Life-boats

SERVICES OF THE LIFE-BOATS OF THE INSTITUTION
IN 1873.

Alexander, Danish brig—saved vessel and 8
Amazon, barque, of Gothenburg 18
Anna Gezina, Dutch galliott . 3
Annie Brooks, schooner, of Bideford 5
Belle Isle, brig, of Shoreham . 8
Catherine, schooner, of Amlwch 3
Celine, schooner, of Gravelines 7
Dalkeith, schooner, of Stornoway 4

David, Prussian schooner — saved vessel and
Die Schwalbe, barque, of Rosstock—saved vessel and . 1
Dollart, schooner, of Detzsum
Druid, screw steamer, of Sunderland
Dunmail, ship 1
Edwin Bassett, barque, of Sunderland
Emmanuel, lugger, of Nantes

SERVICES OF THE LIFE-BOATS OF THE INSTITUTION
IN 1873—continued.

<i>Ercole</i> , brig, of Naples—saved vessel and	11	<i>Marie Boustead</i> , schooner, of Nantes—saved vessel and . .	7
<i>Express</i> , schooner, of Barnstaple	3	<i>Marie Emilie</i> , schooner, of St. Louis	4
<i>Filatore</i> , barque, of Genoa . .	10	<i>Mary</i> , schooner, of Laxey . .	3
<i>Flossie</i> , brig, of Guernsey—assisted to save vessel and . .	8	<i>Mary Ann</i> , schooner, of Bideford	4
<i>Fomalhaut</i> , barque, of Greifswald—assisted to save vessel and	11	<i>Mary Anne</i> , schooner, of Plymouth	5
<i>Fortuna</i> , barque, of Gothenburg—assisted to save vessel and	16	<i>Mary Ann Holman</i> , barque, of Exeter, remained by vessel.	
<i>Francis</i> , brig, of Porthcawl . .	6	<i>Milton Lockhart</i> , barque, of North Shields	15
<i>Françoise Marie</i> , brig, of Caen—saved vessel and	7	<i>Nicomi</i> , yacht, of Dalkey . .	4
<i>Gem</i> , schooner, of Wexford . .	6	<i>Noordster</i> , Norwegian barque	12
<i>Georg und Louise</i> , brig, of Rostock—remained by vessel.		<i>No. 4</i> , schooner, of Arundel . .	3
<i>Georgè IV.</i> , schooner, of Am-lwch—saved boat and . . .	2	<i>Otto</i> , brig, of Moss, Norway . .	8
<i>Gold Finder</i> , schooner, of Belfast—rendered assistance.		<i>Peggy</i> , sloop, of Cardigan . .	2
<i>Hawk</i> , schooner, of Chepstow—saved vessel and	4	Pilot coble, of Scarborough—saved coble and	6
<i>Hendon</i> , brig, of Sunderland—assisted to save vessel and . .	9	<i>Princess of Wales</i> , barque, of Glasgow	16
<i>James</i> , schooner, of Arbroath . .	4	<i>Prosperity</i> , sloop, of Portmadoc .	3
<i>James</i> , schooner, of Carnarvon .	4	<i>Quail</i> , steamer, of Cork . . .	7
<i>Levant</i> , schooner, of Brixham—assisted to save vessel and .	7	<i>Rambler</i> , schooner, of Plymouth .	2
<i>Leven</i> , sloop, of Runcorn . . .	2	<i>Rambler</i> , schooner of Wexford .	3
<i>Little Queen</i> , fishing hooker, of Dungarvan	6	<i>Remembrance</i> , brig, of Middlesborough	8
<i>Lizzie</i> , screw steamer, of London	12	<i>Richard and Emily</i> , schooner, of Highbridge—assisted to save vessel and	4
<i>Lord Howick</i> , schooner, of Maldon—saved vessel and . . .	6	<i>Sarah</i> , schooner, of Strangford .	4
<i>Lord Reidhaven</i> , schooner, of Banff	3	<i>Sarpsborg</i> , barque, of Christiania—assisted to save vessel and	14
<i>Louisa</i> , Danish barque—assisted to save vessel and . .	10	<i>Scott</i> , barque, of Sunderland . .	10
<i>Marie Nathalin</i> , Russian schooner	9	<i>Seventeenth of May</i> , schooner, of Christiania	6
		Skiff, of Wicklow—saved boat and	2
		<i>Snowdrop</i> , fishing smack, of Aberystwith—saved vessel and	2
		<i>Spec</i> , brigantine, of Plymouth .	7

SERVICES OF THE LIFE-BOATS OF THE INSTITUTION
IN 1873—*continued.*

<i>Thomas and Sons</i> , schooner, of Carnarvon — remained by vessel.		Total lives saved by Life-boats, in 1873, in addition to 21 vessels	471
<i>Torrance</i> , brig, of Irvine	6	During the same period the Institution granted rewards for saving Lives by fishing and other boats	197
<i>Triton</i> , Prussian barque	1		
<i>Unicorn</i> , brigantine, of Irvine	7		
<i>Wilson</i> , schooner, of Whitehaven	5		
<i>Woodham</i> , steamer of Christiana	20	Total of Lives saved in Twelve Months	668
<i>Ystroom</i> , barque, of Amsterdam —assisted to save vessel and	14		



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